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**THE INVESTMENT OPPORTUNITY SET AND
CORPORATE OWNERSHIP, DIRECTORSHIP,
AUDITING, AND DISCLOSURE POLICIES: SOME NEW
ZEALAND EVIDENCE**

Mahmud Hossain

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This research is dedicated to my wife **Rukhsana**,
for her unfailing love and support.

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ABSTRACT

Recent studies in accounting and finance indicate that accounting and other important corporate policy decisions (e.g., debt, dividend, compensation, disclosure, and hedging) are related to investment opportunities present in the firm. My study attempts to augment this research by investigating whether decisions about the level of managerial share ownership, percentage of outside directors, quality of audit services, and amount of forward-looking information disclosure are also related to the investment (growth) opportunities. I argue that because the incentive problem between the manager and shareholders is an increasing function of the firm's IOS (a combination of growth options and specific assets-in-place), firms with more growth options will be motivated to use various mechanisms including managerial share ownership, outside directors, high quality audit services, and prospective information disclosure to mitigate agency problems. Using data from 80 New Zealand (NZ) companies listed on the stock exchange in 1995, the cross-sectional tests reveal that the IOS is positively and significantly related to managerial share ownership, outside directors, auditing, and disclosure policies.

Because the monitoring mechanisms employed at a particular point in time could be driven by past growth or changes in past growth and because firms select a mix of mechanisms to align manager-shareholder interests, I also use time series-tests for the period 1991-1995 to determine whether changes in the mix of these mechanisms are related to the changes in IOS. The results indicate that changes in the pairwise mix between outside directors and auditing, outside directors and disclosure, and inside ownership and disclosure are not significantly related to changes in IOS. By contrast, predictions about the changes in the pairwise mix between disclosure and auditing, inside ownership and outside directors, and inside ownership and auditing and changes in IOS are supported. Thus, the time-series tests provide limited support for the predictions that the pairwise mix between monitoring mechanisms will change with IOS. Nevertheless, the results of this study provide useful insights into ownership concentration, board composition, auditing, and disclosure practices in NZ and add to the growing literature on investment opportunities.

CHAPTER ONE

OVERVIEW OF THE PROJECT

1.0 INTRODUCTION

Beginning with Jensen and Meckling (1976), many research studies in the accounting and finance literature have used agency theory to explain variations in important corporate policy decisions. Empirical works have especially been undertaken to explain how inside (managerial) ownership, outside directors, auditing, and disclosures are used to control agency conflicts inherent in public corporations.¹ One line of empirical research examines the theory by investigating the determinants of inside (managerial) ownership levels, composition of boards of directors, quality of auditing, and disclosure practices (e.g., Demsetz & Lehn, 1985; Bathala & Rao, 1995; Chow, 1982; and Chow & Wong-Boren, 1987). Another line investigates the effects of these mechanisms on firm performance (Agrawal & Knoeber, 1996; Hermalin & Weisbach, 1991).

However, very little research has been carried out using an *ex ante* efficient contracting perspective to explain variations in inside ownership, board composition, auditing, and disclosure policies amongst firms. The efficient contracting perspective maintains that in contracting equilibrium the 'optimal set of corporate policy decisions' will vary as a function of the firm's investment opportunity set (hereafter IOS) which conceptually captures the growth potential (a mix of growth options and specific assets-in-place) of the firm.

¹ For a critical review of these early studies see, for example, Holthausen and Leftwich (1983), Christie (1990), and Watts and Zimmerman (1990).

Drawing on a framework developed by Smith and Watts (1992), Gaver and Gaver (1993), Skinner (1993), and Anderson, Francis, and Stokes (1993), I test the relationship between IOS and corporate ownership, board composition, auditing and disclosure policies. However, my study differs from previous research in a number of respects. First, I examine the relationship between IOS and corporate policy decisions using data from NZ where the corporate sector is less regulated than in the US (see chapter 3). Consequently, the tests carried out in my study could eliminate the confounding effects of supply side factors (e.g., influence of external regulation) and provide more direct and powerful tests of the relationship between inside ownership, board composition, auditing, and disclosure decisions and IOS.

Second, I examine the effect of IOS on multiple policy variables, whereas earlier studies have investigated a single policy in isolation, e.g., disclosure policy (Cahan & Hossain, 1996) or hedging policy (Mian, 1996). Thus the tests conducted in previous research are not comprehensive and lack power. Third, I examine the relationship between IOS and inside ownership, board composition, auditing and disclosures on a longitudinal basis. Additionally, unlike previous research (e.g., DeFond, 1992; Francis & Wilson, 1988) where the focus was on the change in individual mechanisms, I investigate the time-series relation by examining changes in the mix of mechanisms.

The motivations of my study are twofold. First, theory based empirical research into the determinants of managerial ownership, outside directorship, auditing, and disclosures can provide insight into organisational behaviour, e.g., by helping to explain why the use of various monitoring mechanisms varies across firms. Second, ownership concentration, outside directors, auditing, and disclosures may affect firm performance, corporate investment, and prospects for future growth so the results of this study could enable shareholders, debtholders, and other stakeholders to better assess financial performance and make more informed investment

decisions. For example, empirical evidence showing a positive relation between information about the firm's future prospects and IOS may provide a positive signal to shareholders and debtholders about the management's ability and so enable them to make investment decisions and assess financial performance (Bryan, 1997).

1.1 AIM AND OBJECTIVES OF THE STUDY

The aim of my study is to examine empirically the relationship between ownership concentration, board composition, auditing, and disclosure policies and IOS. To achieve this, my study has the following specific objectives:

- 1) to test cross-sectionally the association between IOS and corporate ownership, board composition, auditing, and disclosure policies using recursive system equations;
- 2) to analyse data to test time-series associations between changes in the pairwise mix of governance mechanisms and changes in IOS.

1.2 RESEARCH METHODOLOGY

My research is carried out using several methods described as follows:

- 1) a literature-based search to identify the methodological limitations of previous research with regard to ownership concentration, board composition, auditing, and disclosure, and to provide a foundation for the development of hypotheses tested in this thesis;

- 2) cross-sectional tests examining the effect of IOS on inside ownership, board composition, auditing, and disclosure policies; and
- 3) longitudinal tests to assess whether changes in IOS result in changes in the mix of inside ownership, board composition, auditing, and disclosure policies on a pairwise basis.

1.2.1 LITERATURE BASED SURVEY

The literature on IOS and the determinants of ownership concentration, board composition, auditing, and disclosure policies is reviewed. The focus is on studies that utilised the agency perspective to explain variations in these policy decisions. The literature is obtained from refereed journals, conference proceedings, professional journals, electronic journals, working/discussion papers, books, and dissertations. I identify literature from (i) a CD-ROM database search, (ii) a manual search of accounting-based indices, and (iii) references cited in the previous relevant research.

1.2.2 EMPIRICAL RESEARCH

The empirical research is carried out as follows:

- 1) The theoretical and empirical relationships between IOS and policy variables are tested cross-sectionally. The main question investigated is whether decisions about inside ownership, board composition, auditing, and disclosure are related to IOS. To provide data to perform empirical tests, data are extracted from Datex data services, a mail

survey, and published annual reports of companies listed on New Zealand Stock Exchange (NZSE) in 1995.

- 2) The relationship between IOS and inside ownership, board composition, auditing, and disclosure are examined on a longitudinal basis. The main research question addressed is whether changes in IOS lead to changes in the pairwise mix between inside ownership, outside directors, auditing and disclosure policy decisions. To shed light on this, changes in the pairwise mixes between policy variables measured between 1991-1995 are regressed on changes in IOS variables.

1.3 OUTLINE OF THESIS

My thesis is divided into eight more chapters dealing with issues considered relevant to its aim and objectives. A concise description of each of these chapters is given below.

CHAPTER TWO REVIEW OF THE LITERATURE ON THE LINKAGE BETWEEN IOS AND CORPORATE OWNERSHIP, BOARD COMPOSITION, AUDITING, AND DISCLOSURE POLICIES

In this chapter I review literature relevant to the overall purpose of this study. Theoretical and empirical research related to IOS, inside ownership, board composition, auditing, and disclosure policies are reviewed.

CHAPTER THREE THEORY AND HYPOTHESES DEVELOPMENT FOR CROSS-SECTIONAL RELATIONSHIPS BETWEEN INSIDE OWNERSHIP, BOARD COMPOSITION, AUDITING, AND DISCLOSURE AND IOS

This chapter describes concisely the NZ institutional environment and compares its key features with the US environment. This is because compared with the US, the NZ business environment

is relatively unregulated and because most IOS research has been carried out in the US. In addition, the chapter develops several hypotheses for cross-sectional tests.

*CHAPTER FOUR CROSS-SECTIONAL TESTS OF THE RELATIONSHIP BETWEEN
INSIDE OWNERSHIP AND IOS*

In this chapter I discuss the sample and model selection procedures and the measurement of dependent and independent variables selected for cross-sectional tests of the relationship between inside ownership and IOS. I also analyse, present, and discuss the empirical results.

*CHAPTER FIVE CROSS-SECTIONAL TESTS OF THE RELATIONSHIP BETWEEN
BOARD COMPOSITION AND IOS*

In this chapter I examine empirically the determinants of board composition.

*CHAPTER SIX CROSS-SECTIONAL TESTS OF THE RELATIONSHIP BETWEEN
AUDITING AND IOS*

This chapter investigates the effects of IOS, inside ownership, outside directors, and control variables on audit expenditures and audit quality.

*CHAPTER SEVEN CROSS-SECTIONAL TESTS OF THE RELATIONSHIP BETWEEN
DISCLOSURE AND IOS*

In this chapter, I examine the relationship between voluntary disclosure of prospective information and IOS, inside ownership, outside directors, audit quality, new offerings, and firm size.

CHAPTER EIGHT TIME-SERIES RELATIONSHIPS BETWEEN CHANGES IN THE MIX OF INSIDE OWNERSHIP, OUTSIDE DIRECTORS, AUDITING, AND DISCLOSURE AND CHANGES IN IOS

In this chapter, I develop hypotheses and test the time series associations between changes in the pairwise mix between inside ownership, outside directors, auditing, and disclosure and changes in IOS.

CHAPTER NINE CONCLUDING REMARKS

In this chapter I summarise the findings of the study and provide conclusions. The contribution of this study and areas of future research are identified and limitations of my study are acknowledged.

CHAPTER TWO

LITERATURE REVIEW

2.0 INTRODUCTION

In this chapter, I review the extant body of literature which seeks to explain variations in corporate monitoring policies across firms. The purpose of this chapter is to provide a narrative review of the literature relevant to the overall purpose of my study.² A detailed review of the theoretical and empirical research has been undertaken to provide a basis for the development hypotheses to be tested in this thesis.

The chapter is divided into six more sections. Sections 2.1 and 2.2 review theories linking conflicts between shareholders, managers, and debtholders and the roles of ownership concentration, board composition, auditing, and voluntary disclosures in controlling such conflicts. The section 2.3 reviews empirical studies related to IOS. Sections 2.4 to 2.7 review earlier research on ownership concentration, board composition, auditing, and voluntary disclosure respectively. Section 2.8 provides a summary of the chapter.

² An alternative approach to the narrative review is called meta analysis. Meta analysis is used to evaluate the aggregate knowledge obtained from extant empirical studies. Glass (1976) in his pioneering work defines:

"Meta-analysis refers to the analysis of analyses...for the purpose of integrating the findings. It connotes a rigorous alternative to casual, narrative discussions of research studies which typify our attempts to make sense of the rapidly expanding literature".

Meta-analytic review has been used in the positive accounting literature by Christie (1990) who examines the ability of contracting and size theories in explaining variations in accounting choices across firms.

2.1 AGENCY THEORY OF THE FIRM - MANAGER-SHAREHOLDER CONFLICT

Agency theory seeks to explain the origin of, and ways to minimise conflicts that occur when parties to a contract have divergent interests (Jensen & Meckling, 1976). While the agency problem emanating from the separation of ownership and control has been discussed extensively in the literature (see Seth & Thomas, 1994 for a review), a formal theory was not developed until 1976.

Jensen and Meckling (1976, p. 308) formally analyze the agency relationship. They define the firm as a "set of formal and informal contracts under which one or more principals engage another person as their agent to perform some service on their behalf, the performance of which requires the delegation of some decision making authority to the agent". Further, they argue that these contracts give rise to conflicts of interests between principals and agents because agents (managers) are assumed to make decisions that maximise their own utility.

For instance, an agency problem occurs when managers own a proportion, but not all, of a firm's equity. This proportional ownership induces managers to 'shirk' (e.g., two hours lunch break), and to over consume perquisites, such as large offices and corporate jets, because the manager bears only a fraction of the costs but enjoys the full benefit of such activity. The shareholders can foresee the problem and discount the price of their claims for the firm's shares. Jensen and Meckling (1976) refer to this as 'price-protection', and the resulting reduction in equity or bonds represents 'residual loss' that is borne solely by the agent (via price protection). To reduce the residual loss, agents may voluntarily write contracts or bond themselves to assure the principal that they will not act in an aberrant way. Additionally, principals may incur expenditures to limit agents' opportunistic behaviour by overseeing or monitoring their activity. Jensen and Meckling

(1976) call the sum of these expenditures agency costs of equity and show that such costs are borne by the agent.

2.1.2 SHAREHOLDER-MANAGER AND DEBTHOLDER CONFLICT

Jensen and Meckling (1976) contend that agency cost of equity can be reduced by using more debt financing. Holding managerial investment in the firm constant, Jensen and Meckling show that increases in the fraction of the firm financed by debt increase the manager's proportional ownership. This will mitigate agency problems caused by manager-shareholder conflicts. Moreover, agency literature suggests that debt financing serves as a control mechanism to mitigate conflicts of interest between shareholders and managers. For instance, Jensen (1986) argues that debt financing bonds the firm to make periodic repayments of debts, and thereby reduces 'free cash' available for spending at the discretion of managers.³

However, the existence of debt claims also creates various agency costs, including incentive effects associated with debt, monitoring and bonding costs, and potential bankruptcy costs (Jensen & Meckling, 1976). Analysing the role of debt covenants in the control of debtholder-equityholder conflict, Smith and Warner (1979, p. 117) point out that "there is no easier way for a company to escape the burden of a debt than to pay out all of its assets in the form of dividend, and leave the creditors holding an empty shell". They discuss four nonmutually exclusive ways in which problems related to shareholders and bondholders conflicts may be manifested:

³ Jensen (1986) defines free cash flows as cash flows "...in excess of that required to fund all projects that have positive net present values when discounted at the relevant cost of capital" (p. 323).

- (1) Asset substitution arises when managers substitute high risk for low risk projects once debt has been issued and priced commensurate with low variance project (Jensen & Meckling, 1976).
- (2) The under-investment problem arises when managers make suboptimal investment decisions, i.e., reject profitable investment projects because payoffs accrue to bondholders (Myers, 1977).
- (3) Claim dilution arises when firms issue debt with the same or higher priority as that of existing debt.
- (4) Dividend payout problem arises when debt is issued on the assumption of a certain dividend rate and the rate is subsequently increased.

Of the reasons noted above, the asset substitution and underinvestment problems have implications for the current study, as they relate to the nature of the assets held by the firm. In both cases, the market value of debt is reduced and share value is enhanced when managers make investment decisions that are suboptimal from debtholders' point of view. This transfers wealth from debtholders to shareholders. Being rational, bondholders expect this opportunistic behaviour and safeguard themselves by demanding a lower subscription price on debt issued to the firm. The result of this 'safeguard or price protection' is that shareholders bear the entire agency cost of the debt.

Because of this, Jensen and Meckling (1976) suggest that shareholders-managers will write debt covenants which inhibit wealth transfers from debtholders. Furthermore, shareholder-managers have incentives to incur expenditures for producing and disseminating accounting information or hiring an external auditor for monitoring purposes. By reducing equity and debt related agency costs shareholders-managers can increase the value of the firm.

2.2 IOS HYPOTHESIS

The discussion presented in the section 2.1 suggests that an agency problem can arise either from conflicts between a firm's shareholders and managers or between a firm's shareholders and creditors. The former arises due to shirking and perquisite consumption by managers. The latter arises because of asset substitution and underinvestment incentives associated with corporate investment decisions. The IOS hypothesis (Smith & Watts, 1992), which draws on agency theory, postulates that such incentive problems and their solutions will differ between organisations in accordance with their investment opportunities.

The IOS hypothesis derives largely from the work of Myers (1977) who holds that the value of the firm comprises two elements. The first element represents real assets (called assets-in-place) which are valued independently of the manager's future discretionary investments. The second component represents real options (assets yet to be acquired), where their values reflect future discretionary investments or IOS. Myers (1977) argues that agency costs of debt will be lower when firms have more assets-in-place rather than growth options because assets-in-place can be used as collateral. This is because assets-in-place are generally acquired for specific purposes and limit managerial discretion over future investments.

Conversely, firms whose value is largely represented by growth options offer little collateral for lenders and are therefore associated with higher agency problems between shareholders and fixed claimants (e.g., those agency conflicts arising from underinvestment incentive). To control the increase in debt-related agency costs, Myers suggests that a firm should finance growth options with equity rather than debt. In other words, Myers' analysis suggests that firms with more real assets should use more debt financing.

Alchian and Woodward (1988) define IOS somewhat differently than Myers (1977). They see IOS as being related to a resource's plasticity and monitoring costs. They define resources or investments as plastic if they have "a wide range of discretionary, legitimate decisions within which the user may choose or that an observer can less readily monitor the choice" (p. 69).

In comparing steel and drug manufacturing firms, Alchian and Woodward (1988) indicate that the former has fewer "initial options to control decisions about resources" than the latter. Additionally, they contend that managerial behaviour is readily observable in steel manufacturing firms since technology is largely determined by the nature of the plant and provides fewer opportunities for moral hazard. In contrast, drug companies have a wider range of legitimate discretionary choices of research direction. Drug companies activities may also be difficult to monitor and evaluate because of the highly specialised nature of their activities.

Transaction cost economics, which is a branch of agency (contracting) theory (see, for example, Deegan, 1997) identifies assets of high and low plasticity (i.e., growth options and assets-in-place) by distinguishing between specific and general investments. Specific investments are investments that generate returns that are dependent upon the continued association with some other specific resources or transacting parties (e.g., a building under a long term lease) and are nonredeployable (Alchian & Woodward, 1987).

General investments on the other hand are investments which are transferable at a minimal cost. An example of a general investment would be the investment by an employee (clerk) in learning the necessary skills to aggregate sales data through an accounting package. Such an employee can leave the firm or switch employers without a significant productive loss. Another example of a general investment would be an investment in general purpose oil tanker. Such a tanker may be utilised in various ways with relatively little loss of wealth.

As with Myers (1977), Williamson (1985) argues that the mix of specific and general investments will affect the firm's governance structures. For example, Williamson (1988) postulates that although rule-bound debt contracts can alleviate the asymmetric information between the debtholders and the shareholders (and managers), there are likely to be adverse effects on the value of specific investments if debtholders force the firm into liquidation. Because debtholders price protect themselves ex ante against future costs of bankruptcy, Williamson contends that equity will be the preferred governance structure as asset specificity in the firm increases (i.e., debt becomes too expensive). While conflicts of interest between shareholders and debtholders are minimised when less debt is used, in high IOS firms, conflict of interests between shareholders and managers will rise as equity financing increases.

Consequently, these firms will use a different set of monitoring to control the equity-related agency costs. Some of the mechanisms contracting parties may use include: ownership concentration, outside directors, auditing, and disclosure policies (see sections 2.4-2.7 below).⁴ The empirical research related to IOS and monitoring role of these four mechanisms are discussed below. Unless noted otherwise, all research review is US-based.

⁴ Another way to control agency problem is to tie management's goal to that of shareholders by means of a compensation contract. To limit the scope of the study, I will not examine this control mechanism.

2.3 THE IOS STUDIES

The IOS literature began with a US study by Myers (1977) who analytically examine associations between IOS and firms' financing policies. Subsequently, a number of researchers have attempted to augment the literature by testing the effect of IOS on accounting (e.g., Skinner, 1993), auditing, (e.g., Anderson & Zimmer, 1995; Anderson et al. 1993), and disclosure (e.g., Cahan & Hossain, 1996) policies.

Smith and Watts (1992) investigate the association between measures of the firm's IOS and the firm's debt, dividend, and compensation policies using industry level data. The objectives of their study are: 1) to investigate the empirical relation between IOS and three policy variables and 2) to provide a basis for assessing the relative importance of contracting cost, taxes, and signalling theories in explaining variations in corporate policy decisions. With regard to agency problems related to debt, Smith and Watts find that firms with more IOS have lower debt/equity ratios because equity financing mitigates agency problems related to the under-investment incentives. Smith and Watts also find that non-growth firms tend to pursue higher dividend policies to reduce agency costs related free cash flow.

With respect to IOS and compensation policy, Smith and Watts find high growth firms tend to pay greater amounts of cash compensation to managers and rely heavily on stock-based compensation plans. Based on their findings, Smith and Watts (1992) conclude that contracting cost theory is more important in explaining variations in observed debt, dividend, and compensation policies than either tax-based or signalling theories.

Gaver and Gaver (1993) examine whether variations in debt, dividend and compensation policies are due to the differences in IOS. To shed light on the issue they access data relating to 237 growth and 237 non growth firms. The novel aspect of their work is that it uses firm, rather than industry, level data and it develops a composite measure for IOS using factor analysis. Gaver and Gaver then regress debt, dividend, and compensation policies on IOS after controlling for firm size. The results indicate that IOS is negatively related to debt and dividend policies and positively related to cash compensations and stock-based compensation plans in high-growth firms. Overall, their results are consistent with those reported by Smith and Watts.

Drawing on Smith and Watts (1992) and Gaver and Gaver (1993), Skinner (1993) tests the relationship between IOS and discretionary choice of accounting procedures. Following Watts and Zimmerman's (1990) suggestions, he adopts a contracting efficiency as well as an opportunistic perspective to explain the variation in managers' choice of accounting procedures. He argues that the direct relation between IOS and the choice of accounting procedures is a result of contracting efficiency and the indirect relation (via debt and compensation contract) between them is due to managerial opportunism. Three accounting procedures are examined: 1) inventory, 2) depreciation, and 3) goodwill. Using a sample of 504 firms he finds that firms with more assets-in-place are more likely to make income increasing depreciation accounting and income decreasing inventory accounting choices than firms with fewer assets-in-place. With respect to goodwill, Skinner documents that the goodwill amortisation period is positively related to leverage and bonus plan variables and inversely related to measures of IOS.

Anderson et al. (1993) enquire whether IOS affects the demand for monitoring from external auditing, internal auditing, and outside directors. They answer this by presenting empirical evidence on the relation between IOS and the pairwise mix between internal and external auditing and directors' monitoring. Using a cross-sectional design, they find that firms with more

growth options use more directors compared with auditing and rely more on external relative to internal auditing to mitigate manager-shareholder conflict.

More recently, Cahan and Hossain (1996) examine whether existence of growth opportunities in the firm's IOS explains why some firms make voluntary disclosure of their future prospects in the published annual reports. They examine two attributes of disclosure: 1) overall disclosure pertaining to firms' future prospects, and 2) firms' disclosure of quantitative profit forecast. Like Gaver and Gaver (1993), they also use a number of proxies as measures for IOS and extract a composite IOS measure. Additionally, they control for firm size, new issues, and percentage of equity held by the top 10 shareholders. To test their hypotheses, Cahan and Hossain obtain data from 67 listed on the Kuala Lumpur Stock Exchange with fiscal year ending 1991. Contrary to the prediction of the IOS hypothesis, they find that the disclosure of earnings forecasts is related to IOS in a sample of low growth firms.

2.3.1 METHODOLOGICAL PROBLEMS

As with most empirical studies, the IOS research also has a number of methodological shortcomings. First, the proxies for IOS are misspecified. Baker (1993) argues that proxies for IOS used in earlier research are noisy and could reflect factors (such as competition) other than IOS. For example, Tobin's q has been used as a surrogate for IOS. A problem with the use Tobin's q is that it also proxies for a variety of factors, such as firm performance (Morck et al. 1988), monopoly power (Ahmed, 1994), and competition (Hagerman & Zmijewski, 1979), and this could bias the coefficients and lower the power of the tests.

The second problem pertains to the simultaneity between IOS and policy variables. Lang, Ofek and Stulz (1996) report that independent variables (e.g., proxies of IOS) used in previous research could be endogenous (determined in part by the dependent variable, for example, leverage) and as a result this problem may bias tests against finding support for IOS hypothesis. Third, with the exception of Anderson et al. (1993), the IOS studies do not examine the substitutions among the policy variables. For instance, Gaver and Gaver (1993) argue that debt, dividend, and compensation policies are correlated since they are related to IOS. However, in their empirical tests, Gaver and Gaver ignore the substitution effect among the policy variables and instead employ reduced form regressions to estimate three equations separately. Furthermore, Gaver and Gaver ignore some important independent variables (e.g., the effect of inside ownership on debt) pertinent to individual equations, which creates noise in the estimated coefficients.

2.3.2 *SUMMARY AND EVALUATION OF STUDIES ON IOS*

In this section empirical studies on IOS were reviewed. Researchers tested the ability of contracting cost theory in explaining variations in corporate debt, dividend, compensation, and accounting policies. Collectively, they documented evidence which supports the efficient contracting view that corporate policy decisions vary as a function of the firm's IOS. This suggests that the present study can use IOS to explain variations in ownership, directorship, auditing, and disclosure policies. Table 2.1 presents details of each study in this area. The IOS research suffers from methodological problems such as measurement errors and omitted variables. Nevertheless, IOS studies represent a major advance in applying efficient contracting approach to corporate governance decisions and provide a basis for my study.

Table 2.1: Summary of empirical studies on IOS

Author(s)/Issue	Dependent variable(s)	Independent variables	Methods	Results	Comments and criticisms
Smith & Watts (1992). Examine association between IOS and financing, dividend and compensation policies.	Financing, dividend, and compensation policies.	IOS. Control variables are firm size, regulation and accounting return.	OLS regression. Generalised least square method to estimate the three equations. Pooled cross section and time series regression.	Growth firms pursue lower debt and dividend policies and pay higher cash compensation to executives than their non-growth counterparts. Contracting cost theory is more important than tax based or signalling theories in explaining variations in corporate policy choices.	Weak test of compensation policy. Ignore details of cash compensation from incentive plans.
Gaver & Gaver (1993). Replicate and extend earlier study by Smith and Watts (1992).	Debt, dividend and compensation policies.	IOS and a set of control variables - firm size, firm performance.	OLS, Tobit, and Logit regressions. Factor analysis.	Leverage and dividend are negatively related to IOS, and cash compensation and stock option plans are positively related to IOS.	Ignore interdependence among the policy variables. Single equation estimation permits no analysis of simultaneity.
Skinner (1993). Test the link between IOS and accounting policy choice.	Choice among alternative accounting policies (e.g., depreciation, inventory and goodwill).	IOS. Intervening variables are debt and compensation plan.	OLS model.	Non-growth firms use income increasing depreciation and income decreasing inventory accounting choices than growth firms. Goodwill amortisation period tends to be positively related to leverage and bonus plan and negatively related to measures of IOS.	Uses imprecise proxy for IOS. For example, Tobin's q actually represents firm performance rather than IOS.

Table 2.1: Summary of empirical studies on IOS (continued)

Author(s)/Issue	Dependent variable(s)	Independent variables	Methods	Results	Comments and criticisms
<p>Anderson, Francis & Stokes (1993)</p> <p>Investigate the effect of IOS on a package of monitoring which includes directorships, external auditing and internal auditing.</p>	<p>Pairwise mix between directorships and auditing and, external and internal auditing.</p>	<p>IOS and firm size as a control variable.</p>	<p>OLS model.</p>	<p>High growth firms use more directors compared auditing and rely more on external relative to internal auditing.</p>	<p>The proxy used as surrogate for directorships is imperfect because they exclude stock options from their measure of directors' compensation.</p>
<p>Cahan & Hossain (1996).</p> <p>Examine the relationship between disclosure of forwardlooking information and IOS.</p>	<p># of future oriented information disclosed in the chairman's statement of annual reports.</p>	<p>Experiment variable IOS. Control variables - firm size, equity offerings, and % of stock owned by top 10 equity holders.</p>	<p>OLS and logit regressions. Factor analysis to estimate a combined measure of firms' IOS.</p>	<p>Decision to release forecast of future earnings is related to IOS only in a sample of low growth firms.</p>	<p>Focus on demand for disclosure. Consequently, results may be confounded by cross-sectional differences in omitted supply-side cost factors (i.e., proprietary costs).</p>

2.4 OWNERSHIP CONCENTRATION

The agency theory literature considers ownership concentration as a mechanism which helps to mitigate incentive problems arising from separation of ownership and control. The early studies on separation of ownership and control examine whether owner controlled firms outperform management controlled firm. The bulk of these studies used percentage holdings of voting shares as a benchmark to segregate firms into owner controlled (OC) and management controlled (MC) and found mixed results.⁵ Recent studies have tended to move away from this arbitrary OC and MC dichotomy and have instead examined the effects of inside and outside ownership concentration on firm performance. However, unlike the early studies, recent studies have relied on contemporary theories of the firm (e.g., positive agency theory) to develop testable propositions.⁶

2.4.1 *THE EFFECTS OF OWNERSHIP STRUCTURE ON FIRM PERFORMANCE*

The empirical studies on ownership concentration (e.g., Demsetz & Lehn, 1985; Morck, Shleifer & Vishny, 1988; Wruck, 1989; and McConnell & Servaes, 1990) have examined the efficiency of ownership concentration in controlling agency costs by examining the association between ownership structure and firm performance. The review of these studies is presented below.

Demsetz and Lehn (1985) investigate two issues surrounding the separation of ownership and control. First, they examine the economic factors which are associated with ownership

⁵ For a critical review of the early literature see, for example, Hunt (1986).

⁶ Agency theory has two branches: 1) positive agency literature; 2) normative agency literature. The positive agency literature is empirically oriented, while normative agency literature is non-empirical and mathematically oriented (Jensen, 1983; Williamson, 1988; and Eisenhardt, 1989).

concentration. Second, they test the effect of ownership concentration on firm performance. The motivation for their study is to explore empirically the factors that influence the structure of ownership. Using a sample of 500 firms, they find that firm size, instability of profit rates, and industry memberships are significant in explaining differences in concentration of ownership. Additionally, they use recursive regression to test the association between ownership concentration and firm performance. Contrary to the prediction of Berle and Means (1932), they find no significant correlation between firm performance and ownership structure.

Morck et al. (1988) address the issue of whether firm performance increases with management ownership. Based on a sample of 371 firms, they find that corporate performance (as proxied by Tobin's q) increases as board ownership rises but the relationship between the two is not linear. That is, firm performance increases as board ownership increases from 0% to 5%, falls as board ownership rises between 5% to 25%, and then increases for ownership levels beyond the 25%.

In an interesting extension of Morck et al.'s (1988) study, Wruck (1989) considers whether change in ownership concentration associated with a private sale of equity securities is correlated with a change in firm value (as proxied by abnormal return on equity securities). To address this, Wruck accesses data relating to 128 private sales of equities for NYSE and AMEX firms. Wruck then conducts two sets of analyses. The first set focuses on a cross-sectional analysis, using ownership levels and the change in ownership (as measured by the difference in ownership concentration before and after the sale of securities) as independent variables and changes in firm value (measured by the abnormal return arising from the changes in market's expectation of the net present value of the firm) as dependent variable. Wruck finds a significant increase in the firm's value with the increase of ownership level. The second set is a comparison of her results with those of Morck et al. (1988). Wruck's investigation yields results similar to those of Morck

et al., except for the 0-5% range of ownership where no significant relationship is found between the change of ownership and firm performance.

McConnell and Servaes (1990) examine the relationship between corporate performance and the structure of equity ownership. They extend the earlier study by Morck et al. (1988) in two ways. First, they classify ownership structure into four categories such as corporate insiders, individual atomistic shareholders, block shareholders, and institutional investors. Second, they use a time-series rather than cross-sectional design to test the relationship between ownership concentration and firm performance (as measured by Tobin's q). McConnell and Servaes find a significant curvilinear relation between corporate performance and proportion of shares held by insiders. Tobin's q first increases and then decreases as inside ownership exceeds approximately 40% to 50%. They also find a positive relation between Tobin's q and the proportion of shares owned by institutional investors.

2.4.2 *METHODOLOGICAL PROBLEMS*

All the studies reviewed in this section suffer from a number of methodological problems such as misspecification of dependent and independent variables. For example, the measures used to surrogate for firm performance vary across the studies. They are chosen arbitrarily and are employed in empirical tests without any sensitivity analysis. Consequently, these studies fail to provide reliable tests of the theory. The lack of power of the tests may also be due to the misspecification of the independent variables. For instance, McConnell and Servaes assume an additive relationship among the ownership variables (measured by piecewise variables) but fail

to consider the interactive effect between inside and outside ownership and how they affect the firm's performance.⁷

In addition, ownership concentration studies suffer from at least two major methodological problems. First, these studies test the effect of ownership levels on firm performance but ignore influences of other control mechanisms on firm value (e.g., board composition and compensation plans). Second, all the studies reviewed do not control for IOS which is correlated with ownership concentration and firm performance (Gaver & Gaver, 1993). Thus, the significance levels of the tests reported in earlier studies could be overstated.

2.4.3 SUMMARY AND EVALUATION OF STUDIES ON OWNERSHIP CONCENTRATION

In this section I reviewed empirical research on ownership structure. Most of the studies in this area investigate the efficiency of ownership concentration in controlling agency problems by testing the effect of ownership concentration on firm performance. Demsetz and Lehn (1985) are an exception in that they also examine the determinants of ownership concentration. Demsetz and Lehn found firm size, variability of accounting earnings, and the firm's industry affiliation to be significantly related to ownership concentration.

All the studies reviewed in this section suffer from a number of methodological problems such as misspecification of the dependent and independent variables and omitted variables. Nevertheless, four of the five studies reviewed in this section provide evidence consistent with the prediction of Jensen and Meckling (1976) that ownership structure affects firm performance (see Table 2.2). This suggests that the present study can use ownership concentration to test its relationship with IOS. However, unlike prior studies where ownership concentration is examined in isolation, in this study I include a number of alternative mechanisms and test the effects of IOS on the mix of those mechanisms.

⁷ For a discussion of the problem resulting from ignoring interactive effects among the right-hand-side variables see, for example, Ali and Kumar (1994).

Table 2.2: Summary of empirical studies on ownership concentration

Author(s)/Issue	Dependent variable(s)	Independent variables	Methods	Results	Comments and criticisms
<p>Demsetz & Lehn (1985).</p> <p>Examine two issues surrounding separation of ownership and control: (i) factors associated with ownership structure; (ii) the effect of ownership structure on firm performance.</p>	<p>% of shares controlled by top 5, top 20 shareholders, herfindhal index of ownership concentration; accounting profits as surrogate for firm performance.</p>	<p>Firm size, variability of profits, regulated utility or financial institutions, industry - media or sports.</p> <p>Control variables are R & D exp., advertising exp., capital exp.</p>	<p>OLS regression, recursive regression.</p>	<p>Firm size, instability of profit rate, regulation, and industry category are significantly related to ownership concentration.</p> <p>Ownership structure variables are not statistically related to firm performance.</p>	<p>Models may be misspecified due to omissions of important monitoring mechanisms (e.g., board composition) and growth opportunities of the firm.</p>
<p>Morck, Shleifer & Vishny (1988).</p> <p>Test the relationship between managerial ownership and firm performance.</p>	<p>Tobin's q, accounting earnings.</p>	<p>Levels of stock ownership by board members: 0-5%, 5-25%, 25% over.</p> <p>Control variables are R & D, advertising exp., leverage, and replacement cost of assets.</p>	<p>Piecewise linear OLS regression.</p>	<p>Firm performance increases in the 0-5% board ownership range, declines in the 5-25% range, then increases beyond the 25% range.</p>	<p>Results may be misstated because an important factor that influences firm performance (i.e., control from non-management owners) is not examined.</p>

Table 2.2: Summary of empirical studies on ownership concentration (continued)

Author(s)/Issue	Dependent variable(s)	Independent variables	Methods	Results	Comments and criticisms
<p>Wruck (1989).</p> <p>Considers whether change in ownership concentration is associated with change in firm value.</p>	<p>Securities abnormal return.</p>	<p>Ownership levels, changes in ownership, purchaser control and management purchaser.</p>	<p>OLS and piecewise linear OLS regression.</p>	<p>Firm value is positive for low ranges of ownership, negative for intermediate ranges, then positive for high ownership concentration.</p>	<p>Findings may be confounded by the problem with sample selection (i.e., small firms with an average market value of \$234 million).</p> <p>Abnormal returns are estimated without controlling for events that coincide with the announcement of private sale of equity.</p>
<p>McConnell & Servaes (1990).</p> <p>Investigates the association between ownership structure and corporate performance.</p>	<p>Tobin's q.</p>	<p>Ownership by insiders, institutional ownership, ownership by largest outside blockholders, sum of the ownership by all large outside blockholders, indicator variable if a blockholder exists.</p> <p>Control variables are leverage, R & D and advertising intensity.</p>	<p>OLS regression, piecewise linear OLS regression.</p>	<p>Firm performance increases at the low level (e.g., < 40%) of inside ownership and then decreases as inside ownership exceeds the 40% to 50% range.</p>	<p>Explanatory power of the model is low because of a failure to examine the interaction effect between inside and outside ownership.</p>

2.5 BOARD COMPOSITION

Boards of directors in most public companies are comprised of both inside directors who hold other positions in the firm and outside directors who have no such affiliation. The outside directors are often seen as independent and objective monitors, protecting the interests of various contracting constituents against managerial opportunism. Fama and Jensen (1983a) argue that outside directors have greater incentives to monitor corporate decisions on behalf of all shareholders because they have made a "significant investment in establishing reputations as decision experts". Other commentators (e.g., Patton & Baker, 1987) question the ability of outside directors to make independent judgements on firm performance because these outside members are often selected by the top management. Patton and Baker (1987) contend that outside members of corporate boards are likely to be more aligned with management than shareholders.

Two lines of empirical research on board composition have emerged. The first group of studies examines the relationship between board composition and corporate characteristics that proxy for the level of agency cost in the firm. The second group of studies investigates whether outside directors are more effective at monitoring by examining the effect of board structure on firm value at the time of certain corporate events (e.g., adoption of poison pill securities).⁸ These two categories of studies are reviewed below.

⁸ Poison pills securities are used as a defense against hostile takeover attempts. They impose a financial burden on acquirers when triggered by change-of-control events such as a corporate merger. For a discussion of poison pill securities see, for example, Malatesta and Walking (1988).

2.5.1 DETERMINANTS OF BOARD COMPOSITION

The main question addressed by studies of the determinants of board composition is whether outside directors oversee management in an attempt to mitigate conflicts of interest between shareholders and managers. For instance, Bathala and Rao (1995) argue that a firm's optimal board composition will depend on its use of alternate monitoring mechanisms such as managerial equity ownership, dividend payments, and leverage. They test the links between board composition and other financial variables including institutional holdings, growth, volatility, and CEO tenure. They find an inverse relationship between the proportion of outside directors and managerial ownership, dividend payout, leverage, growth, volatility, and CEO tenure. Their results also support a significant positive relationship between board composition and institutional holdings.

Rediker and Seth (1995) address the issue of whether board composition, ownership structure, and mutual monitoring by top management are substitute mechanisms. They posit that since various monitoring mechanisms are used to achieve alignment of the interests of shareholders and managers, the level of a particular mechanism should be influenced by the levels of other mechanisms which simultaneously operate in the firm. Based on a sample of US bank holding companies, they find significant substitution effects between monitoring by outside directors and ownership concentration, managerial share ownership, and mutual monitoring by inside directors.

2.5.2 WEALTH EFFECT OF OUTSIDE DIRECTORS

Research in this category examines the effectiveness of external directors in controlling agency conflicts. These studies are reviewed because, similar to research on determinants of board structure, they also examine whether outside directors protect shareholders interest. These studies

are reviewed below.

Rosentein and Wyatt (1990) consider whether outside directors serve shareholders' interests better when they are selected by the top management (as opposed to when they are selected by large shareholders or as a result of proxy contest). They extend earlier studies on board composition and firm performance in two ways. First, they use security returns rather than accounting profits to proxy for firm performance. Second, they develop a measurement scheme which differentiates between affiliated outside directors and independent outsiders. To test the hypotheses, Rosentein and Wyatt regress shareholders' wealth effects on board composition after controlling for firm size and confounding events (i.e., concurrent announcements made by the firm). They find a significant positive relationship between abnormal securities return and board composition.⁹

Brickley, Coles, and Terry (1994) ask whether outside directors serve shareholders' interests when adopting poison pills plans. Brickley et al. (1994) argue that if outside directors protect shareholders' interests, adoption of a poison pill should decrease agency costs and increase firm value in proportion to the outsiders on the board. To answer their question, Brickley et al. (1994) develop a research design that has much in common with an earlier study by Rosentien and Wyatt (1990). Using a sample of 247 poison-pill announcements, they find a positive relation between abnormal returns to the adoption of poison pills and the proportion of outside directors on the board. They also find that the average stock-price reaction to poison pill adoptions is positive when the outside directors comprise the majority of the board but negative when the board is not controlled by outsiders.

⁹ Abnormal return is the difference between actual and expected returns on a stock. Expected returns are usually computed using market models. For a review of the market-based studies see, for example, Brown (1993).

2.5.3 *METHODOLOGICAL PROBLEMS*

Like the ownership concentration studies, the research on board composition faces a number of methodological problems. First, with the exception of Rosentein and Wyatt (1990), all the studies use a single proxy, i.e., the proportion of outside to inside directors to examine the monitoring ability of outsiders. Because this measure does not differentiate between affiliated and independent outside directors the evidence provided in earlier research could be understated. Additionally, all the studies have investigated the monitoring role of outside directors on a cross-sectional basis making it difficult to ascertain whether the findings are stable over time.

Second, the proxies for agency costs are poorly specified. For instance, Bathala and Rao (1995) use the increase (decrease) in past sales as a measure for the firm's growth. Since agency conflict arises from ex ante growth, by using ex post growth as a construct for IOS, Bathala and Rao (1995) reduce substantially the power of their tests. Moreover, they assume a direct relationship between board composition and growth and ignore the indirect effect of sales growth (via debt and dividend policies) on board composition (see, for example, Skinner 1993).

Third, in addition to the omission of IOS, prior research in this area ignores some important determinants from their estimations. For example, Rediker and Seth (1995) examine substitution effects between the percentage of outside directors and alternative monitoring mechanisms but ignore the effect of compensation plans on board structure.

2.5.4 *SUMMARY AND EVALUATION OF STUDIES ON BOARD COMPOSITION*

In this section I reviewed two groups of studies: 1) studies on the determinants of board composition, and 2) studies on outside directors' monitoring in relation to specific corporate

events. Overall, these studies concluded that outside directors served shareholders' interests and that board composition was statistically related to corporate characteristics of ownership structure, management ownership, leverage, dividend policy, and risk. Table 2.3 provides a detailed summary of studies on board structure. The limitations of earlier research are considered in subsection 2.5.3. On the whole, the results of prior research provide a useful basis for the development of the theory and hypotheses for this thesis.

Table 2.3: Summary of empirical studies on board composition

Author(s)/Issue	Dependent variable(s)	Independent variables	Methods	Results	Comments and criticisms
Bathala & Rao (1995). Examine economic factors that determine the structure of board of directors.	Ratio of outside to total directors on the board.	Inside ownership, dividend payout, debt ratio, institutional shareholdings, growth, volatility, CEO tenure, firm size.	OLS regression.	Managerial ownership, dividend, leverage, growth, volatility, CEO tenure are negatively associated with board composition. Positive association has been found between board composition and institutional holdings. Firm size is not significant.	Low explanatory power of the model due to measurement error with the dependent variable.
Rediker & Seth (1995). Examine substitution effects among board composition, ownership structure and mutual monitoring by top management.	% of outsiders on the board of directors.	% of shares held by large block holders, % of shareholdings by top managers, mutual monitoring, dominant top executive.	OLS regression, Chow test (employed to examine whether the relationship between dependent and independent variables is the same across different sizes of firms).	Ownership by large block holders, management ownership and mutual monitoring by inside directors are inversely related to board composition. Dominant top executive is not statistically significant.	Results may be obfuscated by omitted variables such as compensation contract.
Rosentein & Wyatt (1990). Test the effect of board composition on firm value surrounding the appointment of an outside director.	Corporate value at the announcement of the appointment of an outside director (measured by abnormal returns in securities).	Corporate outsiders, financial outside directors, neutral outside directors, firm size. After controlling for confounding events.	Market model to estimate firm value, OLS regression.	Addition of an outside director enhances firm value. Neutral and financial outside directors are positively and statistically related to firm value.	Fail to control for effects of other agency-related factors (e.g., ownership structure) on corporate value.

Table 2.3: Summary of empirical studies on board composition (continued)

Author(s)/Issue	Dependent variable(s)	Independent variables	Methods	Results	Comments and criticisms
<p>Brickley, Coles & Terry (1994).</p> <p>Investigate the effectiveness of outside directors in controlling agency problem.</p>	<p>Firm value around the time of the adoption of poison pill securities (estimated by two-day abnormal stock return).</p>	<p>% of outside directors, % of inside directors, % of private investors on the board, % of government officials on the board, % of retired executives, % of board members who do not list their occupation as directors and who are not retired business decision makers.</p> <p>Control variables are firm size, share ownership by director type, prior profitability, leverage, industry, institutional ownership, R & D, market to book ratio, whether CEO is the chairman of the board, prior takeover activity.</p>	<p>Market model, OLS regression.</p>	<p>The relations between firm value and proportion of outsiders on the board and between firm value and retired directors from other organisations are positive and statistically significant.</p>	<p>Some of the control variables are selected randomly.</p>

2.6 AUDITING

The central question addressed in previous studies is whether the voluntary selection of external auditors was used as a means of controlling incentive conflicts among managers, shareholders, and debt-holders. Earlier research has focused on (1) voluntary appointment of outside auditors, and (2) voluntary formation of audit committees.

2.6.1 VOLUNTARY USE OF EXTERNAL AUDITORS

Chow (1982) is the first to use an agency framework to investigate managers' incentives to employ outside auditors voluntarily. He hypothesises that firms' incentives to hire external auditors are positively associated with leverage and the number of accounting-based covenants, negatively related to managerial ownership, and positively related to firm size. Chow finds that firm size, leverage, and accounting-based covenants are statistically related to the voluntary appointment of an external auditor as expected.

Firth and Smith (1992) consider why firms voluntarily choose high quality auditors (as measured by Big-Six audit firms) when seeking a stock market listing. Specifically, they examine the "rationale for product market differentiation in the market for audits" (p. 254). In doing so, they develop hypotheses based on agency and signalling theories.¹⁰ They posit that a firm's incentive

¹⁰ Signalling theory was originally developed to explain problems of information asymmetry in the labour market. In the accounting and finance literature signalling theory has been applied to various issues such as corporate dividend policy (e.g., Bhattacharya, 1979), capital structure decisions (e.g., Ross, 1977), voluntary disclosure (e.g., Hughes, 1986), management's ownership (Leland & Pyle, 1977), and auditor quality (e.g., Feltham, Hughes & Simunic, 1991). Morris (1987) notes that the relationship between agency and signalling theories can be assessed by examining their underlying assumptions. He considers that the two theories are complementary rather than competing. He concludes that "a great deal of overlap exists between the two theories because assumptions of signalling theory are also implied in agency theory. However, they are not equivalent theories" (p. 53).

to use high quality auditors is dependent upon: (1) managerial ownership, (2) leverage, (3) age of new issue company, (4) underwriter commission, and (5) control variables representing firm size, amount of capital raised through new issue, industry, and underwriter prestige. Based on data on companies newly listed on the New Zealand Stock Exchange between 1983 to 1986, they find as predicted, that managerial ownership, leverage, and information asymmetry variables are statistically related to demand for high quality auditors.

2.6.2 VOLUNTARY ESTABLISHMENT OF AUDIT COMMITTEE

An audit committee is defined as "a subgroup of an organisation's governing body which has responsibility for overseeing 1) the organisation's external financial reporting process, and/or 2) its internal audit function" (Porter, 1994). The literature on audit committees has developed along three lines: (1) surveys examining existence, composition, and role of audit committees (e.g., Porter & Gendall, 1994); (2) historical developments of recent corporate audit committees (e.g., Birkett, 1986); and (3) economic determinants of audit committee formation (e.g., Pincus, Rusbarsky & Wong, 1989). This sub-section reviews studies that investigate managers' incentives to establish audit committees voluntarily. I select these studies for review because, like the studies reviewed in the sub-section 2.6.1, they also address the question of why an audit function is used by the firm.

Pincus, Rusbarsky, and Wong (1989) investigate voluntary formation of audit committees for a sample of 100 OTC firms. The stated reason for the study is to identify reasons why some companies have formed audit committees while others have not. Using an agency theory framework, they argue that audit committees can be viewed as monitoring mechanisms which "will be employed in high agency cost situations to improve the quality of information flows between principal and agents" (p. 242). They develop six proxies for monitoring: (1)

management ownership, (2) leverage, (3) economies of scale in monitoring costs, (4) information asymmetries, (5) competitive factors in the audit services market, and (6) marketplace differences in information/monitoring preferences. They find support for all six variables, although the relationships with regard to firm size and leverage are relatively weak.

Bradbury (1990) examines the association between firm characteristics and voluntary establishment of audit committees. The aim of the study is to examine empirically incentives of managers to create audit committees. Bradbury finds a significant positive relationship between the audit committee and the number of directors and intercorporate ownership but finds no support for a relation associating auditors' incentives with leverage and assets-in-place, contrary to the evidence documented by Pincus et al. (1989). Bradbury attributes the differences between the results obtained in his study and those of Pincus et al. (1989) to the differences in institutional environment between NZ and the US.

2.6.3 METHODOLOGICAL PROBLEMS

In addition, to focusing on a single monitoring mechanism, audit-related studies suffer from other methodological problems. The most significant problem concerns the reliability of the measures used as proxies for the dependent and independent variables. For instance, Chow (1982) uses industry level data to measure managerial ownership. Because firms operate in multiple industries, the use of industry level data might have lowered the power of his tests and prevented him from observing the predicted effect of managerial ownership on auditor choice. Similarly, the proxies for agency variables used in audit committee research are unreliable. For example, Pincus et al. (1989) and Bradbury (1990) use an indicator variable to surrogate for monitoring by audit committee without considering qualitative characteristics, such as frequency

of meetings, and composition of audit committee, and consequently they reduce substantially the empirical support given to the agency variables.

The prior research also has an econometric problem. For instance, Firth and Smith (1992) and Bradbury (1990) use a small sample (e.g., 13 cases per parameter) to estimate logit regression. Since logit requires a large sample (e.g., 50 cases per parameter) the estimated coefficients in those studies could be unreliable and inaccurate from the standpoint of asymptotic normal theory (Noreen, 1988). In addition, as with board composition research, there is a lack of temporal generalisability. All the studies reviewed here used cross-sectional design to analyse the relation between voluntary appointment of auditors and agency variables. It is not clear that their results are likely to hold longitudinally.

2.6.4 SUMMARY AND EVALUATION OF STUDIES ON AUDITING

In this section I reviewed two types of studies. These were: (1) voluntary appointment of an external auditor, and (2) voluntary formation of audit committee. Table 2.4 gives a detailed summary of these studies. Of the variables tested, firm size, leverage, managerial ownership, and presence of a compensation plan were found to be significantly related to voluntary use of external auditors.

The results are inconclusive for studies that examined voluntary formation of audit committees. Pincus et al. (1989) documented a significant relationship between firms with high agency costs and voluntary formation of audit committee, while Bradbury (1990) reported that the voluntary formation of an audit committee was not related to auditor incentives or agency costs variables. This raises the question of the generalisability of the findings of previous research.

Both categories of studies suffer from three types of methodological problems: (1) specification errors with proxies for contracting cost variables, (2) econometric problems, and (3) reliance on cross-sectional tests. Additionally, like ownership concentration, and board composition research, earlier works on audit-related monitoring do not adequately control for IOS.

Table 2.4: Summary of empirical studies on voluntary use of external auditor

Author(s)/Issue	Dependent variable(s)	Independent variables	Methods	Results	Comments & criticisms
Chow (1982). Investigates managers' incentives to hire an external auditor.	Probability of a firm being externally audited.	Size, management ownership, leverage, accounting based debt covenants.	Univariate tests: Student's t and Mann-Whitney U tests. Logit regression.	Firm size, leverage and # of accounting based covenants are statistically and positively related to voluntary appointment of an external auditor.	Does not examine effects of other monitoring mechanisms (e.g., security analysts) in reducing agency costs of the firm. Measurement problem with management ownership variable. The proxy actually represents industry differences rather than ownership differences between firms.
Firth & Smith (1992). Examine factors associated with auditor choice for firms making initial public offerings.	Audit quality (as measured by Big-6 or non Big-6 audit firm).	Inside ownership, leverage, information asymmetry (proxied by age of new issue company), underwriter commission. Control variables are firm size, amount of capital raised via new issue, industry, underwriter prestige.	Logit regression.	Firms with low inside shareholdings, greater leverage and no trading history are more likely to choose high quality auditors.	Some econometric problems not addressed. Logit requires a large sample.
Pincus, Rusbarsky & Wong (1988). Consider managers' incentives to establish audit committee voluntarily.	Existence or non-existence of audit committee.	Ownership structure, leverage, economies of scale in monitoring costs, information asymmetries, competitive forces in the audit market, market place differences in information/monitoring preferences.	Univariate tests: student's t test and Chi-square test. Logit regression.	All six explanatory variables significantly associated with managers' decision to create audit committee.	An important corporate attribute such as IOS is omitted from empirical tests.

Table 2.4: Summary of empirical studies on voluntary use of external auditor (continued)

Author(s)/Issue	Dependent variable(s)	Independent variables	Methods	Results	Comments & criticisms
Bradbury (1990). Identifies reasons why some firms voluntarily form audit committees while others do not.	Absence or presence of audit committee.	# of outside stockholders, leverage, assets-in-place, intercorporate control, director ownership, auditor incentives, firm size, and # of directors.	Univariate tests: Mann-Whitney U and Chi-square tests. Logit model.	# of directors on the board and intercorporate ownership variables are statistically related to an audit committee formation.	Measurement error with dependent variable Uses a dichotomous measure to proxy for monitoring. Does not consider managers' actual reliance on audit committee (e.g., frequency of audit committee meetings, composition of audit committee).

2.7 VOLUNTARY DISCLOSURE OF FINANCIAL INFORMATION

The literature on corporate disclosure is lengthy and dates back to Cerf (1961) who examines the overall levels of disclosure in annual reports. Since Cerf's pioneering work, numerous studies have examined the relationship between the extent of disclosure (proxied by an index of disclosure created by the researcher) and corporate characteristics in several countries. Most of those disclosure index studies have tended to be largely descriptive or ex post, lacking any coherent motivating theory, with Chow and Wong-Boren (1987) and Hossain et al. (1994) being notable exceptions.¹¹ Subsequent studies have examined specific disclosures such as interim reports (e.g., Leftwich, Watts & Zimmerman, 1981), current cost financial statements (e.g., Wong, 1988a), earnings forecast (e.g., Ruland, Tung & George, 1990), and mineral reserve reports (e.g., Craswell & Taylor, 1992) using a contracting cost framework.

More recent studies, however, have used a variety of economic theories to explain differences in disclosure practices amongst firms. For example, it is argued that voluntary disclosure reduces the cost of equity capital (e.g., Botosan, 1997), lowers the firm's legal liability (e.g., Skinner, 1994), lowers the firm's environmental liabilities (e.g., Barth, McNichols & Wilson, 1995), improves the market price of securities by reducing bid-ask spread (e.g., Welker, 1995; and Healy, Palepu & Sweeney, 1995). This section reviews studies which use a contracting cost perspective to explain the variations in disclosure policies across firms.

Leftwich et al. (1981) examine whether managers' discretionary disclosures of interim reports are related to a number of corporate characteristics. The motivation for their research is to

¹¹ See, for example, Marston and Shrikes (1991) for narrative review and Ahmed (1996) for a meta-analytic review of disclosure indices studies.

investigate the economic incentives of managers to provide interim reports voluntarily. Six corporate characteristics are identified: firm size, leverage, assets-in-place, exchange listing, non-executive directors, and inertia (historical frequency of reporting). They find a significant relationship between frequency of reporting and exchange listing. Additionally, they find an inertia effect, but their results do not support the predictions of leverage and asset-in-place variables.

Chow and Wong-Boren (1987) consider whether managers' discretionary disclosure decisions are aimed at controlling incentive conflicts among managers, shareholders, and debtholders. Based on Watts (1977) and Jensen and Meckling (1976), they identify three relevant agency cost variables: firm size, leverage, and assets-in-place. They create a general disclosure index as an empirical proxy for disclosures. Chow and Wong-Boren then apply the index to the annual reports of 52 Mexican firms to ascertain the level of disclosure. They find that firm size is the only variable which is significantly and positively associated with the level of voluntary disclosure.

Ruland et al. (1990) explore why some firms disclose earnings forecast voluntarily while others do not. They answer this by investigating possible incentives including two agency-related factors, new capital offerings and ownership structure, to the release earnings forecast. Drawing on agency and signalling theories, Ruland et al. hypothesise that managers' decisions to release forecasts of future earnings are positively related to 'good news' (as proxied by the difference between actual earnings and average analysts' forecast adjusted for earnings variability), correction and/or confirmation of analysts' forecasts (proxied by absolute errors of average analysts' forecasts-adjusted for earnings variability), and the issuance of new securities and negatively related to inside ownership. They find that, as predicted, the inside ownership, new

offerings, and absolute errors of analysts' forecasts are significantly related to voluntary disclosure of forecast.

Craswell and Taylor (1992) analyze the association between voluntary disclosure of mineral reserves and various agency cost proxies. The following agency variables are tested: firm size, leverage, cash flow risk, ownership structure, and auditor identity. The purpose of the study is to explore the possible reasons for the diversity of disclosure practices across firms in the extractive industry. To test the research hypotheses, Craswell and Taylor extract data from the annual reports of 86 oil and gas companies listed on the Australian Stock Exchange at the end of 1984. The results indicate that firms' propensity to disclose information on mineral reserves varies depending upon firm size and auditor identity.

2.7.1 METHODOLOGICAL PROBLEMS

In addition to the problems that are discussed in section 2.6, the disclosure studies based on agency theory suffer from other methodological problems. One such problem is specification of the independent variables. The agency theory-based disclosure studies concentrate on demand side factors and test independent variables (e.g., leverage) which could be endogenous. If the specification problems bias the estimated coefficients, empirical associations reported in early studies may be spurious. Additionally, these studies ignore supply side factors [e.g., capital market considerations (Lang & Lundholm, 1993); disclosure related costs (Ali, Ronen & Li, 1994); legal liability (Skinner, 1994)] that also could influence disclosure decisions. Furthermore, the previous research uses imprecise proxies for agency variables (e.g., outside capital). For instance, firm size has been used as a surrogate for a firm's agency cost of outside equity, but as Ball and Foster (1982) and Christie (1990) point out, firm size is a comprehensive variable

and may reflect competitive disadvantage of disclosure, information production cost and management ability and advice, amongst other attributes.

Another problem with previous studies is the measurement error with the dependent variable. For example, Ruland et al. (1990) use a dichotomous measure which ignores the forecast details such as forecast of interim earnings, lower and upper bound projections, and qualitative comments, and this deficiency weakens the statistical significance of their test (King, Pownell & Waymire, 1990).

2.7.2 SUMMARY AND EVALUATION OF STUDIES ON VOLUNTARY DISCLOSURE

In this section I reviewed empirical research on voluntary disclosure. The researchers tended to concentrate on (1) the general level of voluntary disclosure in the corporate annual reports (e.g., Chow and Wong-Boren 1987), (2) voluntary disclosure of specific information (e.g., Ruland et al. 1990), and (3) voluntary disclosure of interim reports (e.g., Leftwich et al., 1981). The main issue addressed by these studies was whether voluntary disclosure of information was related to firm specific factors that proxy for agency costs. Table 2.5 contains details of each study reviewed.

Six firm specific factors were tested across the studies. These factors are firm size, corporate leverage, ownership structure, securities offerings, auditor identity, and assets-in-place. Firm size was examined in all four studies reviewed in this section and was significant in all of them. Leverage was tested in three of the four studies reviewed. It was insignificant in all three studies. This could be due to the weak test of the leverage hypothesis. These studies did not examine debt contract details, so cross-sectional variations in contract constraints were not factored into empirical tests. Ownership structure was examined in two of the four studies reviewed and was

significant in one study. The capital offering variable was examined in one of the four studies reviewed and was significant. Similarly, auditor identity was tested in one of the four studies reviewed and was significantly positive.

The asset-in-place variable was examined in three of the four studies reviewed in this section. This variable was found to be not significant in all three studies. This is probably due to the problem of measurement error with this variable. Overall, these studies reported results that generally support agency explanations for discretionary disclosure. However, the prior studies do not address the issue as to why firms voluntarily disclose information about their growth prospects. As in Cahan and Hossain (1996), I seek to answer the question by examining the relationship between disclosure of prospective information and the firm's IOS.

Table 2.5: Summary of empirical studies on voluntary disclosure

Author(s)/Issue	Dependent variable(s)	Independent variables	Methods	Results	Comments and criticisms
Leftwich, Watts & Zimmerman (1981). Investigate managers' incentives to disclose interim reports voluntarily.	Firms' reporting frequency (i.e., quarterly, semi-annually, annually).	Firm size, leverage, assets-in-place, inertia, exchange listing, proportion of outside directors.	Probit model.	Exchange listing and inertia are significantly related to disclosure.	Measurement error with dependent and independent variables. Do not control for supply side cost factors that affect disclosure.
Chow & Wong-Boren (1987). Examine factors behind voluntary disclosure by Mexican firms.	The extent of voluntary disclosure (as measured by weighted and unweighted disclosure scores).	Firm size, leverage, and assets-in-place.	OLS regression.	The extent of voluntary disclosure vary significantly with firm size.	Power of test reduced by specification problems with some of the independent variables. Use a noisy proxy for the agency cost of equity.
Ruland, Tung & George (1990). Examine the motivation of managers to release forecasts of future earnings.	Disclosure or non-disclosure of earnings forecast in <i>WSJ</i> .	Reporting good news, confirming analysts forecast, equity offerings, ownership structure.	Univariate tests: Student's <i>t</i> test and Wilcoxon matched-pairs test. Probit model.	Confirming analysts' forecasts, ownership structure, and equity offerings are statistically significant in multivariate analysis.	Do not consider details of forecast information. Thus, their test lacks power. Ignore the effect of IOS on disclosure.
Craswell & Taylor (1992). Address the question why some firms disclose information about mineral reserves voluntarily while others do not.	Disclosure or non-disclosure of mineral reserves.	Firm size, leverage, cash flow risk, ownership structure, auditor identity.	Univariate tests: Students <i>t</i> and Mann-Whitney <i>U</i> tests. Probit model.	Firm size and auditor identity are significantly and positively related to disclosure of information about oil and gas reserves.	Weak test of debt hypothesis because the proxy does not differentiate between project specific (private) debt and general (public) debt.

2.8 CHAPTER SUMMARY

In this chapter I reviewed research related to IOS and ownership concentration, board composition, auditing, and voluntary disclosure. I provided detailed summaries in Tables 2.1 to 2.5. From the review of extant empirical studies the following conclusions can be drawn:

- 1) While recent studies on ownership concentration, board composition, auditing, and voluntary disclosure have used agency theory, few studies have attempted to investigate the effect of IOS on these mechanisms.
- 2) Although agency literature suggests that firms select a mix of mechanisms to control for agency problem, few studies have formally tested the effects of corporate characteristics on multiple monitoring mechanisms simultaneously.
- 3) There is little research on the relation between firm characteristics and corporate governance decisions on a longitudinal basis.

CHAPTER THREE

THEORY AND HYPOTHESES DEVELOPMENT FOR CROSS-SECTIONAL RELATIONSHIPS BETWEEN INSIDE OWNERSHIP, BOARD COMPOSITION, AUDITING, AND DISCLOSURE, AND IOS

3.0 INTRODUCTION

Prior research, reviewed in sections 2.4 to 2.7 in the preceding chapter, has examined the efficiency of single monitoring mechanisms in controlling agency conflicts. One problem with this approach is that it examines each monitoring mechanism in isolation and ignores the relationship among the mechanisms. Consequently, the single mechanism research design causes problems of parameter identification and estimation bias, which inhibits meaningful interpretation of variable coefficients (Copley, Doucet & Gaver, 1994; and Smith & Watts, 1992). Other research (e.g., IOS studies) has attempted to address the problem by linking firm characteristics to multiple agency control mechanisms (Agrawal & Knoeber, 1996; Gaver & Gaver, 1993; Jensen, Solberg & Zorn, 1992).

In this chapter I integrate these two lines of research and develop hypotheses to examine empirically the effect of IOS on inside ownership, independent directorship, auditing, and disclosure policies on a cross-sectional basis. The specific purpose of this chapter is to provide theoretical analyses of research hypotheses tested in my study. This chapter has four more sections: Section 3.1 provides background information on the NZ business sector; sections 3.2 and 3.3 develop testable propositions for cross-sectional design. I summarise and conclude the chapter in the last section.

3.1 NEW ZEALAND INSTITUTIONAL BACKGROUND

An important factor which is likely to influence the relationship between corporate governance decisions and IOS is the institutional environment in which the corporation operates. For example, in Anglo-American countries, companies legislation requires management to prepare audited financial statements, defines directors' duties, and may impose penalties on directors who breach those duties. Additionally, the legal system and exchange listing requirements could affect the characteristics of firms and also influence their choice of governance mechanisms. For instance, class actions and contingency-fee systems could facilitate litigation against directors, managers and auditors for misleading information about the firm's future prospects and, therefore, could affect disclosure practices of companies (Frost, 1997).

Indeed, differences in institutional environments such as capital markets, legal, political and regulatory systems, product and factors markets, and internal control systems countries have been recognised as important factors affecting agency costs arising from IOS (Kaplan, 1997; Jensen, 1993). Nonetheless, evidence of the effect of IOS on corporate policy decisions is confined to the US (Booth & Deli, 1996). In this section I provide information on the institutional environment within which New Zealand-based companies operate. In particular I consider the key features of the New Zealand economy and business environment and recent developments in legal and regulatory environments. I also compare the major characteristics of the NZ and the US institutional environments with respect to managerial (inside) shareownership, board composition, auditing, and disclosure of prospective information. The next subsection discusses the salient features of the NZ economy and business environment.

3.1.1 NEW ZEALAND ECONOMY AND BUSINESS ENVIRONMENT

The economic history of New Zealand from 1950 to 1984 has been characterised by economists as one of the most protected, regulated and heavily insulated in the OECD. The country's GDP per capita declined from being third highest in the developed world in 1950 to eighth in 1955 to twenty third in 1989 (Griffin, 1997). In contrast, from 1955 to 1987, Switzerland rose from fourth to first and Sweden moved from tenth to sixth (Crocombe, Enright & Porter, 1991).

Crocombe et al. (1991) also argue that poor productivity, rising unemployment, high inflation, and huge overseas borrowings all contributed to the deterioration of New Zealand's economic performance. As a consequence, economic restructuring (e.g., tight monetary policy, deregulation of financial markets) became the primary objective of the Labour government that came into office in July 1984. A summary of the change in economic policies is presented in Table 3.1.

TABLE 3.1
Summary of the Change in Selected Economic Policies

1.	Elimination of import control	-	Abolished import quotas and licensing in mid-1988 for industries outside industry plan.
2.	Export subsidies	-	Notably to farmers, rapidly phased out from 1985. Removal of bilateral tariffs with Australia by 1990.
3.	Wage and price control	-	Government involvement in private wage negotiation eliminated in 1984. Energy prices deregulated from 1985.
4.	Public sector reform	-	Corporatisation of government departments providing services such as postal service. Adoption of users' pay principles for government services in 1990. Deregulation of airlines and telecommunications in 1987 and 1989 respectively.
5.	Deregulation of financial markets	-	Removal of restrictions on foreign ownership in 1984. Elimination of barriers to entry in banking in 1987.

Adapted from Griffin (1997).

The implementation of economic reforms (popularly known as Rogernomics) brought changes which among other things, lead to a significant growth in GDP, employment, and private and foreign direct investments (Perera & Rahman, 1997). For example, between 1992 to 1995 GDP increased at an annual average rate of 4.5 percent, while inflation averaged 1.7 percent during the three year period. Unemployment fell from around 11 percent to 6 percent in 1995. Additionally, from 1996 to 2000 employment growth is forecast to be 2 percent per annum, of which one half emanates from a further decrease in the unemployment rate, and the remainder from labour force growth (Phillipot 1995).

Current economic growth is expected to continue up to the end of this decade. The official forecasts from 1996 to the year 2000 indicate an annual average growth rate of 4.1 percent and inflation is predicted to fall from 2.7 to 2.0 percent (Griffin, 1997). The restructuring and deregulation policies adopted have opened up new opportunities for both local and foreign investors in industries such as banking, power, telecommunications, and railways that were previously not available for private ownership. Between 1992 and 1994, foreign direct investment rose from NZ\$2,025 billion in 1992 to NZ\$4,449 billion in 1994, of which 50 percent was from Australia, 23 percent from the UK, 8 percent from the US, and 6 percent from Asia Pacific countries. During the same period, the number of businesses financed by private investors rose from 4,800 in 1992 to 9,446 in 1994, and this in turn led to the creation of 225,958 jobs (Statistics New Zealand, 1995).

This privatisation program has also encouraged local firms to seek investment from abroad through listing in overseas stock markets or attracting overseas investors to the local market (Perera & Rahman, 1997). This was reflected in the New Zealand stock market. The market capitalization of the market rose from \$29,843 million at the end of 1992 to \$42,360.46 million in 1994, an improvement of 42 percent over the year, compared with 11 percent increase

between 1991 to 1992 (The Sharemarket Review, 1994). In addition to general policies to promote investment, the New Zealand government took measures, such as closer economic relations (CER) with Australia, to improve trade and investment on a regional basis. The CER agreement not only promotes trade and investments but also supports harmonisation of business law, accounting standards, and regulatory requirements of corporate disclosures (Perera and Rahman 1997). The next subsection describes the regulatory environment in New Zealand.

3.1.2 THE REGULATORY ENVIRONMENT

To improve and maintain competitiveness of the business environment, the NZ government has undertaken legislative measures in the form of the Law Commission Act 1985, Commerce Act 1986, Fair Trading Act 1986, and Securities Act 1987 (Perera & Rahman, 1997). The Law Commission was created as an advisory body to oversee reform and development of NZ law. The purpose of the Commerce Act was to promote fair competition and prevent monopoly in the market. The provisions of the Commerce and Fair Trading Acts are enforced by a government body, the Commerce Commission. Furthermore, under the Securities Act 1987, the Government of NZ created the Securities Commission to encourage investments and augment public confidence.

More recently, four pieces of company legislations have been passed in New Zealand. These are (i) Companies Act (CA) 1993, (ii) Financial Reporting Act (FRA) 1993, (iii) Companies Reregistration Act 1993, and (iv) Takeover Act 1993. The CA 1993 came into force in July 1994. In passing this Act NZ moved away from English company law and toward a North American model (Ross, 1993). The CA abolishes the distinction between private and public companies and the concept of "par value shares", making the share premium account redundant. The 1993 CA permits companies to buy back their shares, provided they can pass a solvency

test, and to have a constitution rather than Memorandum and Articles of Associations. The Act also exempts a company that has not issued securities to the public from having to appoint auditors if a unanimous resolution to that matter is passed in a general meeting of shareholders.

Furthermore, CA 1993 reforms directors' duties and codifies them into statute to increase their role in corporate governance. For example, under the 1993 CA, directors are expected: i) to act in good faith and in the best interests of the company; ii) to exhibit the care, diligence, and skill that a reasonable person would exercise; iii) to avoid conflicts of interest; and iv) to exercise powers for a proper purpose. Directors' responsibility and liability were also increased in regard to the repayments of distributions (e.g., dividends), amounts owed to creditors, and the preparation of companies' financial statements. Directors are required to certify that the company will satisfy a solvency test once the distribution is made (Cahan & Hossain, 1997). Moreover, directors must also consider the solvency test before authorising a distribution (dividends) to shareholders (CA 1993 S52).

Directors' liability to creditors is also affected by CA 1993. Directors are required to give a certificate as to solvency when undertaking actions (corporate reconstruction) which could dilute creditors interest (Ross 1993). The CA 1993 requires the directors to prepare an annual report within five months after the company's balance date. The annual report should contain the financial statements for the company and the group and the auditor's report. Directors' responsibility and liability are also increased with regard to the financial statements. Under FRA 1993, directors must ensure that financial statements of a reporting entity comply with applicable financial reporting standards (FRS).

The FRA 1993 requires that reporting entities file audited financial statements to the Registrar of Companies. This Act created an independent body, the Accounting Standard Review Board

(ASRB), to review and approve accounting standards developed by the Institute of Chartered Accountants of New Zealand (ICANZ). Under the FRA 1993, corporate entities are required to comply with accounting standards approved by the ASRB. In summary, the reporting of corporate activities of New Zealand companies is governed by the disclosure and presentation requirements of the Companies Act 1993 and the accounting standards approved by the ASRB which require companies to prepare a complete set of annual audited financial accounts including a statement of cash flows.

There are also additional disclosure requirements imposed by the NZSE with regard to managerial shareholdings, investment activities, and directors' compensation. Additionally, the NZSE requires companies to adhere to generally accepted accounting principles. The Re-Registration Act 1993 allows a three-year transition period for existing companies to re-register under the CA 1993. The Takeover Act formed a takeover panel to recommend a takeover code which is expected to allocate resources efficiently and encourage competition for corporate control (Perera & Rahman, 1997).

3.1.3 DIFFERENCES IN ENVIRONMENTAL CHARACTERISTICS BETWEEN US AND NEW ZEALAND

The US corporate governance system is generally characterised as a "market-based system". Managers are constrained by an external market for corporate control and by internal mechanisms such as board of directors that are largely comprised outside directors. Capital markets in the US are liquid and corporate ownership is unconcentrated (Kaplan, 1997). In contrast, the capital market in NZ is illiquid and the external market for corporate control is thin (Wong, 1988b). Therefore, NZ based companies are likely to rely on a combination of internal mechanisms to monitor managerial discretion and maximise firm value.

Fox and Hamilton (1994) contend that relative to the US, corporate ownership is more concentrated and as such separation of ownership and control may not be as severe a problem in NZ companies which face a different IOS. For instance, many of the low growth industries with incentive problems regarding free cash flow indicated in Jensen (1986, 1993) are underrepresented in NZSE relative to the US markets such as the New York Stock Exchange (NZSE Sharemarket Review, 1995).¹² Consequently, the separation of ownership and control may not generate incentive conflicts between contracting parties to the same extent as in large US industries (Jensen, 1986).

The legal environment between the two countries varies on many dimensions. First, unlike the US system, there are no contingency-based litigation and class action privileges in NZ (Bradbury, 1990). Second, although the successful defendants (plaintiffs) are entitled to the costs of bringing a case to court, in most cases the amounts awarded are much lower than the actual cost incurred by the plaintiff and usually arrived at by an arbitrary judicial scale such as the High Court (counterpart of the Supreme Court of US) rules (Mullholand, 1995). Therefore, securities litigations against directors, officers, and promoters pertaining to misstatement in special financial reports (prospectuses) frequently observed in US are relatively rare in NZ (Mak, 1996).

As in the US, boards of directors in NZ are legally responsible for managing companies. The directors are elected and removed by ordinary resolution at a shareholders' annual general meeting (s 153 and s 156 of CA 1993). However, the board characteristics of NZ firms and the regulations of the market for directors differ from the US. Wakelin (1994) shows that NZ firms

¹² According to Jensen (1986; 1993) the misuse of free cash flow is widespread in the following industries: Oil, tobacco, steel, textile, tyre, forest products, chemicals, and food. The 1995 NZSE industry classification indicates that only 12 percent of the firm population belong to those industries.

typically have smaller boards than their US counterparts, although this may be due to the overall small size of NZ companies. While the NZ and US companies have approximately the same mix between inside and independent directors (Wakelin, 1994), the extent of CEO-duality (CEO is also the board chairperson) is significantly different between the two countries. Indeed, recent evidence (e.g., Mak & Roush, 1996) suggests a greater likelihood of CEO-duality among NZ companies than those studied by Brickley et al. (1994). Additionally, unlike some jurisdictions (e.g., NYSE) in the US, there is no legal requirement in NZ to select board members using more outside directors. As a consequence, the use of outside directors by NZ companies is completely voluntary.

As with the US, the market for audit services in NZ is dominated by the Big Six audit firms. However, there are differences in the extent of the Big Six firms' representation. For example, the presence of Arthur Anderson and Price Waterhouse is less pronounced in NZ when estimated by audit market concentration ratios (Walker & Johnson, 1996; Johnson, Walker & Westergaard, 1995). Further, unlike the US, the UK and Canada, audit committees in NZ have not been legally endorsed by either professional bodies or regulatory agencies (Porter & Gendall, 1993).

Aside from managerial shareownership, independent directors, and auditing, an important mechanism for mitigating adverse selection problems between managers and outside investors is the disclosure of information about firms' future prospects. Eikner, Hefzi, and Glezen (1995) show that disclosure of future-oriented information is positively related to firm value. Further, this relation is more pronounced in the time period after the Securities and Exchange Commission's Financial Reporting Release (FRR) No. 36, which requires that forward-looking information be disclosed in the MD & A of annual reports was issued.

However, in NZ there is no mandatory requirement for the disclosure of prospective information in the annual report. The Financial Reporting Standards (FRS) 29 provides general guidelines for the presentation of prospective information but does not require that such information be disclosed in the MD & A (Chairman's report) section of annual report (Para 2.3 [a] FRS-29). Therefore, any prospective disclosures in the MD & A (Chairman's report) by NZ companies represent the product of a voluntary decision by management. This makes NZ's relatively unregulated corporate sector ideal for testing the IOS hypothesis which predicts that variation in governance decisions is influenced by growth opportunities of the firm. The theoretical relations between IOS and the four monitoring policies are explained in the next section.

3.2 HYPOTHESES DEVELOPMENT

The IOS literature (e.g., Barclay & Smith, 1995) contends that two major contracting problems arise when firm value is represented by intangible growth options. First, there is an *ex ante* risk

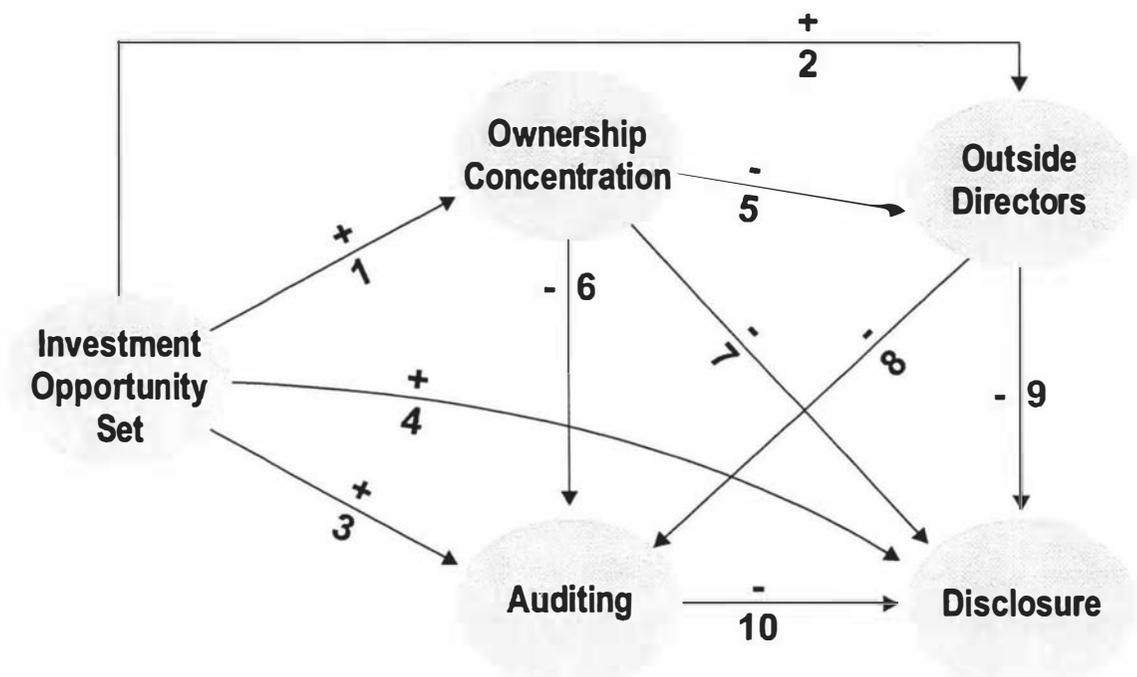


Figure 3.1 Relationships Between IOS and Policy Variables. Based on Anderson and Zimmer (1995).

that managers could take sub-optimal decisions from the investors' point of view (asymmetric information problem), and second, they might act opportunistically to maximise their self-interest at the expense of shareholders' wealth (moral hazard problem). Therefore, governance mechanisms including ownership concentration, board composition, auditing, and disclosure will be used to control such problems and maximise corporate value (Smith & Watts, 1992).

Based on Anderson and Zimmer's (1995) representation of the relationship between the structure of audit committee, claim structures, and assets composition among Australian firms, the relationships between IOS and inside ownership, board composition, auditing, and disclosure policies are depicted in Figure 3.1. The assumption that underlies Figure 3.1 is that the firm's IOS is determined exogenously and that inside ownership, board composition, auditing, and disclosure decisions emerge as a function of the firm's IOS. These causal relationships are shown by lines in Figure 3.1.

Smith and Watts (1992) indicate that because corporate policy decisions are endogenously determined, simultaneity may exist in determining relationships between IOS-policy variables. Therefore, rather than being exogenous (as assumed in Figure 3.1), IOS may be endogenous and determined in part by the level of inside ownership, board composition, auditing, and disclosure. However, because IOS literature is developing, Smith and Watts (1992) contend that it is useful to consider the firm's IOS as exogenous (pre-determined) for empirical estimation of the cross-sectional variations in corporate policy decisions. Additional discussion on the simultaneity is provided in chapter 4.

In the following subsections I put forward testable hypotheses regarding links between inside ownership, board composition, auditing, and disclosure and a firm's IOS.

3.2.1 *Inside Ownership*

Modern corporations are characterised by separation of ownership and control. As a result, in the presence of asymmetric information, the parties will engage in self interest behaviour (Fama & Jensen, 1983a,b). Demsetz and Lehn (1985) consider ownership concentration to be a governance structure which can resolve contracting problems associated with separation of ownership. They argue that when share ownership is widely held, the potential for conflicts of interests between managers and shareholders will be greater than in firms characterised by a high share ownership concentration. The reason is that in a widely held firm, individual shareholders have a small equity stake and have little incentive to monitor managerial activities because they bear all the costs of monitoring, but the benefits are shared by other shareholders.

In contrast, if individual shareholders have significant equity interests, they have more motivation to monitor managers' actions because they will bear a larger proportion of the costs that arise from the sub-optimal investment decisions of the firm's managers. This analysis implies that the optimal ownership structure will be a function of the agency costs faced by the firm. Because corporate financing policies and resultant agency costs vary in accordance with the firm's IOS, firms with more growth options are likely to have larger concentration of inside ownership than those with a greater proportion of assets-in-place. This relationship is shown by link 1 in Figure 3.1. Consequently it is hypothesised:

H1: Ceteris paribus, inside ownership will be positively (negatively) related to high (low) IOS.

However, a number of corporate characteristics apart from the firm's IOS have been identified as further determinants of the level of managerial ownership. For example, Demsetz and Lehn

(1985) suggest that ownership concentration may decrease with firm size. Their argument is that the larger the firm, the greater the personal wealth that has to be invested to own a given fraction of equity, and this limits managerial ability or willingness to become owners, and thus controls the supply of inside ownership. Moreover, Jensen et al. (1992) contend that managers take a larger stake in firms where they can exercise most control over corporate activities. Because small firms are less diversified and operate in a single domicile, more equity ownership is likely to allow managers to better control business activities. Consequently, I include firm size as a control variable and predict a negative relationship between proportion of inside ownership and firm size.

In addition, free cash flow as discussed in chapter 2 has been included as determinant of inside ownership in this study. Jensen (1986) contends that conflicts of interest between managers and shareholders increase when firms generate substantial free cash flows. Because managers can use free cash to accumulate their power in the firm and increase their utility (e.g., by means of perquisite consumption) rather than invest in projects which are likely to give shareholders a positive net present value return, firms with more free cash may be motivated to control incentive problems by bonding managers' economic interest to shareholders' wealth through shareownership schemes. This reasoning implies that free cash will be positively related to the level of inside ownership. Lange and Sharpe (1995) and Bergström and Rydqvist (1990) find that free cash flow is positively associated with level of inside ownership. Accordingly to test H₁, I control for free cash flow. To be exact, I specify the functional form of ownership structure as follows:

$$INSO = f (IOS, FIRM SIZE, FREE CASH). \quad (1)$$

In this equation the primary variable of interest is IOS.

Prior research suggests that ownership concentration could be affected by firm-specific risk. For instance, Demsetz and Lehn (1985) argue that ownership concentration is expected to increase with firm-specific risk because managerial performance is difficult to assess in firms that operate in a noisy environment. Further, in the IOS literature, Smith and Watts (1992) suggest that firms with greater earnings volatility (a measure of risk) are those with relatively more growth options, and that these firms will use equity ownership by insiders to control managerial opportunistic behaviour. Because of the overlap between these two explanations, I do not test risk as a separate determinant of inside ownership. Demsetz and Lehn (1985) also document a significant relationship between ownership concentration and an industry variable. Because firms operate in multiple industries rather than in a single industry, this variable is difficult to operationalise. Additionally, even if industry classifications are available they are likely to be subjective. Therefore, I do not include industry variable as an influencing factor in this study.

Other variables which have previously been tested by Bathala, Bowlin, and Rao (1995) and Jensen *et al.* (1992) are leverage and dividend. Their contention is that because various mechanisms designed to limit agency problems act as substitutes, leverage and dividend are likely to be negatively related to inside ownership. Since the free cash flow variable discussed in this section may be related to leverage and dividend, I do not examine them as control factors of ownership concentration.

3.2.2 *Outside directors*

The important monitoring role played by outside directors is discussed extensively in the corporate governance literature (see chapter 2). Collectively, these studies argue that internal monitoring in an organisation is likely to be stronger when boards of directors are dominated by outside directors. The reason is that outside directors will be motivated to act as impartial

monitors of owners' interests in order to enhance their own reputations and ensure their monitoring services will be demanded in the future. Fama and Jensen (1983a, p. 315) share this view when they indicate that outside directors: "...have incentives to develop reputations as experts in decision control.... the value of their human capital depends primarily on their performance as their internal decision managers..." .

Because asset characteristics and consequent agency costs differ between firms, in an IOS framework, the monitoring provided by outside directors is likely to be related directly to the nature of the assets held by companies. If the corporate value is largely represented by assets-in-place, the firm will use debt covenants to limit managerial discretion over use of assets, thereby obviating the need for monitoring functions performed by outside directors (Anderson et al. 1993).

In contrast, when a firm's value is principally made up of growth options, managers will be given more decision-making discretion as equity financing places fewer constraints on management activity relative to covenant-based debt (Skinner, 1993). Since the value of growth firms is dependent upon managers' discretionary investment decisions, absentee owners (shareholders) will put in place *ex ante* mechanisms such as outside directors to supervise managers' actions. This analysis implies that companies that use more outside directors are more likely to be characterised by high IOS rather than by low IOS. I depict this relationship by link 2 in Figure 3.1. Consequently, I hypothesise:

H2: Ceteris paribus, fraction of outside directors will be positively (negatively) related high (low) IOS.

Jensen and Meckling (1976) suggest that conflicts of interest between managers and shareholders arise when securities are sold outside the firm. Because the degree of interest conflict will be

higher in firms with low managerial ownership, managers in these firms will have incentives to appoint outside directors to signal that they are, in fact, acting in the interest of shareholders. Bathala and Rao (1995), and Rediker and Seth (1995) document that board structure is significantly and negatively related to inside ownership as shown by link 5 in Figure 3.1. Therefore, a related hypothesis is:

H2_A. Ceteris paribus, fraction of outside directors will be negatively related to inside ownership.

In addition to IOS and inside ownership, a number of other firm-specific factors are included as control variables. For instance, agency theory suggests that the conflict of interest between shareholders and debtholders increases with debt financing, and as a result the demand for outside directors' monitoring is expected to increase as leverage grows. An alternative explanation advanced by Jensen (1986) is that increased leverage mitigates agency conflict by reducing the amount of free cash available to managers. Without these free cash flows the manager is constrained in consuming perks and is less likely to make suboptimal investment decisions from debtholders' standpoint. Consequently, highly levered firms may employ fewer outside directors. Because of these competing explanations the relationship between leverage and board composition can be either positive or negative.

Hermalin and Weisbach (1988, 1991) suggest that long serving CEOs have greater influence over the director selection process and may include members who are likely to be aligned with top management. They contend that because length of tenure on a board contributes to CEOs' power and influence (through familiarity with organisational culture), CEOs with long tenure will have more influence in shaping their boards' membership. Bathala and Rao (1995) find a significant negative relationship between CEO tenure and fraction of outside directors. Consequently, I introduce CEO tenure as a control variable.

I also include firm size as a determinant of board composition because earlier agency-based research suggests that firm size is positively related to various types of agency control mechanisms such as audit committee (Menon & Williams, 1994) and debt, dividend, and compensation policies (Smith & Watts, 1992). Furthermore, Barclay and Smith (1995), and Gaver and Gaver (1993) contend that the larger the firm the greater the information asymmetry between managers and outside stakeholders, and this increases the demand for monitoring to alleviate the asymmetric information (agency) problem. Accordingly, larger firms may tend to employ a greater fraction of outside directors to resolve their increased agency problems.

An opposing view, put forward by Rosentien and Wyatt (1990), is that small firms may use more outside directors. Their contention is that because small firms are not closely followed by security analysts the incremental monitoring arising from the inclusion of an outside director may be more valuable (measured by abnormal securities returns) in smaller than in larger firms. As with leverage, the relationship between board composition and firm size is ambiguous but to avoid misspecification problems, I control for a size effect. To explain differences in board composition across firms I examine the following functional relationship:

$$OUTDIR = f(IOS, INSD, LEV, CETNR, SIZE). \quad (2)$$

In this equation primary interest is in IOS and INSD.

Hermalin and Weisbach (1988) contend that firm performance may affect the composition of the board of directors. They find that poor performance tends to increase the removal of inside directors and the inclusion of outside directors. Since firm performance may be influenced by the firm's investment opportunities and CEO tenure, I do not include it as a predictor of board structure in this study. Whidbee (1997) examines the effect of CEO-duality (CEO also the board

chairperson) on the structure of the board of directors. The reasoning is that since the fraction of outside directors acts as a substitute for alternative agency control mechanisms, outside board membership will be lower for firms with separate CEO and chairperson positions. Using a sample of bank holding companies he finds a significant negative relationship between board composition and CEO duality. Because Mak and Roush (1996) report a greater likelihood of CEO duality among NZ companies than those examined by US studies and because prior research (e.g., Boyd, 1995) examining CEO duality-firm performance relationship has arrived at conflicting results, CEO duality is not considered in this study.

Board size is another variable examined in previous research by Booth and Deli (1996). The reasoning is that the larger the board, the greater the difficulty the CEOs have of influencing all board members to agree and make decisions, including a decision to appoint directors. A competing argument put forward by Jensen (1993) is that smaller boards (less than 7 board members) are better able to monitor top executives' performance. This is because large boards tend to create non-optimal governance structures and reduce shareholders' wealth (see, for example, Byrd & Hickman, 1992).

Furthermore, in the empirical literature Bhagat and Black (1996) document a significant positive correlation between board size and firm size. To reduce ambiguity in hypothesising the relationship between board structure and board size and avoid the misspecification problem which could arise from multicollinearity between independent variables, the board structure-board size relationship is not tested in this thesis. Additionally, previous studies (e.g., Bathala & Rao, 1995) examine institutional ownership and earnings volatility as influencing factors of the structure of board of directors but in this study I do not examine them as separate control factors because these variables are likely to be correlated with the independent variables (e.g., level of inside ownership, IOS) included in this study.

3.2.3 *Auditing*

Jensen and Meckling (1976), Watts and Zimmerman (1986), and others see auditors as playing an important role in corporate governance as limiters of opportunistic behaviour by managers. Because agency costs are ultimately borne by the original owner-manager (Jensen and Meckling 1976), incentives exist on the part of the management to reduce these costs through voluntary contracting with shareholders and debtholders. Since these contracts (e.g., compensation and debt contracts) can be expressed in accounting numbers, managers may try to manipulate the reported accounting numbers for either opportunistic or efficiency reasons.¹³

In such a situation, the credibility of financial statements can be enhanced by having an independent external auditor testify on the accuracy of accounting numbers. Further, in the auditor choice literature, DeAngelo (1981) suggests that audit firms have incentives to prevent aberrant managerial behaviour such as the moral hazard problem.¹⁴ This is because a decline in the traded value of a corporate client emanating from a lack of credible financial reports will reflect on the auditor's public image and adversely affect the future value of the "quasi-rents" they derive from their client-base. Therefore, engagement of high quality audit firms can be a credible means of mitigating agency problems (Benston, 1985; Craswell, Francis & Taylor, 1995).

These reasonings imply that demand for audit services will be a function of the firm's IOS. As managers in high growth firms tend to have considerable leeway over business decisions, they

¹³ For a detail discussion of opportunistic and efficient contracting viewpoints of managers' discretionary choice of accounting procedures see, for example, Christie and Zimmerman (1994), Skinner (1993), and Watts and Zimmerman (1990).

¹⁴ Moral hazard refers to divergent interest and arises whenever the agent's actions are not directly observable by the principal.

engage auditors *ex ante* to assure shareholders that they have not misused corporate funds. Additionally, auditing is more difficult in high growth firms because it is hard to put a value on intangibles. One result is that high growth firms are likely to purchase more audit services as a device to control agency costs as seen in link 3 in Figure 3.1. I formalise this relationship in the following manner:

H3: Ceteris paribus, costs of audit services (audit quality) will be positively (negatively) related to high (low) IOS.

Based on reasoning noted in H2_A, a negative relationship is expected between ownership and auditing because high ownership concentration can lead to lower agency costs. Graphically, the relationship is depicted by line 6 in Figure 3.1. I test the relationship as follows:

H3_A: Ceteris paribus, costs of audit services (audit quality) will be negatively related to inside ownership.

Rediker and Seth (1995) note that a mix of governance mechanisms helps to control contracting incentive conflicts in firms and that different forms of governance could substitute for each other depending upon reliance placed on other mechanisms such as outside directors. Anderson et al. (1993) also subscribe to the view that outside directorships could substitute for monitoring from external auditors and enable the firm to control managerial discretion over corporate activities on an *ex ante* basis.

Moreover, because outside directors seek to protect shareholders' interests (Brickley et al., 1994) and because outsiders have incentives to enhance their reputation as decision experts, they will regulate managerial behaviour by overseeing their actions, providing advice, and vetoing poor investment decisions. Such screening of managers' decisions by outside directors *ex ante* reduces

the need for monitoring mechanisms to be introduced *ex post*. Therefore, as link 8 in Figure 3.1 suggests:

H3_B: Ceteris paribus, costs of audit services (audit quality) will be negatively related the fraction of outside directors.

In addition, the test of the IOS hypothesis will need the control of numerous organisational characteristics such as leverage, new offerings, client firms' complexity, audit complexity, and firm size. As with board composition (H_2), the relationship between leverage and monitoring and control from the auditor is ambiguous, but to provide a reliable estimation of this coefficient, I control for the influence of leverage.

Dechow, Sloan and Sweeny (1996) and Johnson and Lys (1990) note that firms tend to increase monitoring before new offerings in an effort to augment the marketability of new securities. These authors explain that new issues heighten managers' incentives to pursue investment projects that would transfer wealth away from potential investors to existing residual claimants (asset substitution problem) and consequently raise demand for additional monitoring. Because prospective investors use accounting numbers and other information to assess present and future firm performance (Bryan, 1997), managers are likely to purchase more audit services to enhance the reliability of such information. This line of reasoning suggests monitoring and control from auditors increases if the company makes new offerings during the year or contemplates making new issues in the near future. Therefore, I predict a positive association between expenditures on auditing and new offerings.

Previous research draws parallels between clients' organisational complexities and levels of expenditures on auditing. The reasoning is that organisational complexity could increase with structural divisionalisation (segmentation) and this could affect the amount of expenditures on

auditing (Adams, Sherris & Hossain, 1997). Because firms with diverse activities are complex and generate more internal transactions, more segments are likely to require more audit work and this is likely to result in higher costs of audit. As with Johnson et al. (1995), I expect a positive relationship between level of expenditures on auditing and clients' organisational complexities.

Receivables and inventory have been introduced to control for audit complexity. Because it is more difficult (risky) to audit a given amount of receivables and inventory than to audit other balance sheet items (Johnson et al. 1995), firms with large amounts of receivables and inventory should require more effort on the part of the auditor in reviewing these accounts, and this results in higher audit fees. This variable has been tested in most audit fees studies, and prior results support a positive relationship between audit fees and receivables and inventory (see Walker & Johnson, 1996, for a review of the literature).

Chow (1982), Francis and Wilson (1988), and others document that firm size is positively related to the level monitoring provided by auditors. The contention is that large firms are more likely to have an ownership structure divorced from control and so the problem of asymmetric information is probably more severe in larger firms. In accord, the contracting constituents in large firms may demand greater monitoring and control from auditing and hence incur higher costs than small firms to mitigate their asymmetric information (agency) problem. Consequently, I express the functional form used to test the relationship between auditing corporate characteristics as follows:

$$AUD = f (IOS, INSD, OUTDIRDUM, LEV, NEWOFF, \ln SEGS, RECINV, \ln SIZE). (3)$$

The primary focus of this equation is on IOS, INSD, and OUTDIRDUM.

Earlier studies (e.g., Johnson et al., 1995; Clarkson & Simunic, 1994; Ettredge et al., 1994; Francis & Wilson, 1988) examine the effects of number of subsidiaries, geographic dispersion of company operations, and future cash flow risk on the proxies of monitoring and control from auditing. Because these variables are likely to be correlated with IOS and *lnSEGS*, I do not include them as separate independent variables in this thesis.

3.2.4 Disclosure

Jensen and Meckling (1976) show that information asymmetry between managers and suppliers of outside capital (shareholders and debtholders) is a characteristic of corporate organisations and that this situation results in incomplete, hence costly, contracting. Jensen and Meckling argue that publication of corporate annual reports facilitate *ex post* monitoring of agents' performance and reduces contracting problem between the firm and its various claimants. Bryan (1997), Whittred and Zimmer (1992), and Ruland et al. (1990) add that public disclosure of prospective information enables investors to differentiate between more profitable and less profitable firms and helps resolve agency problems associated with information asymmetry.¹⁵

Moreover, in the IOS literature, Smith and Watts (1992) and Gaver and Gaver (1993) predict that where firm value is mainly in the form of growth options, the potential for shareholder-manager agency costs related to information asymmetry, will be greater than in firms where investments are mainly in the form of assets-in-place. The discretionary disclosure of information about the firm's future prospects is therefore likely to be greater in firms with more growth

¹⁵ The term information asymmetry derives from signalling literature (e.g., Leland & Pyle, 1977). Whittred and Zimmer (1992) suggest that information asymmetry stems from separation of ownership and control which, in turn, engenders agency problems between managers and shareholders. While they emphasise the contracting cost purpose of accounting and reporting, they concede that the reduction of information asymmetry is a potentially powerful explanation of these phenomena. Whittred and Zimmer also note that the dual functions of contracting and reduction of information asymmetry are not mutually exclusive.

options: Shareholders can use this information to ensure that their economic interests are optimized, and managers can provide this information to signal that they are acting in the best interests of owners. Consequently, link 4 in Figure 3.1 implies:

H4: Ceteris paribus, voluntary disclosure of prospective information will be positively (negatively) related to high (low) IOS.

Based on reasonings noted in H2_A as shown in link 7 in the diagram, I put forward the following hypothesis with regard to the ownership structure/disclosure relationship:

H4_A: Ceteris paribus, voluntary disclosure of prospective information will be negatively related to inside ownership.

Chow and Wong-Boren (1987) discuss the trade-off between disclosure and alternative monitoring mechanisms. They suggest that the fraction of outside directors on the board is one alternative mechanism, and they contend that the presence of outside directors can substitute for voluntary disclosure.

Adams and Hossain (forthcoming) and Malone, Fries, and Jones (1993) add that because disclosure policy reflects the monitoring requirements placed on managers by the shareholders of the firm, the amount of disclosure about the firm's future prospects is likely to decline as outside directors are added to the board of directors. In other words, internal monitoring of investment decisions by outside directors is considered to be a cost-efficient substitute for nontrivial disclosure costs (Malone et al., 1993). This suggests disclosure will be negatively related to the proportion of outside directors, as seen in link 9. More formally, I hypothesize:

H4_B: Ceteris paribus, voluntary disclosure of prospective information will be negatively related to the fraction of outside directors.

Based on interchangeability between auditing and disclosure as depicted by link 10 in Figure 3.1, I test the relationship between disclosure and auditing by the following hypothesis:

H4_C: Ceteris paribus, Voluntary disclosure of prospective information will be negatively (positively) related to high (low) quality auditors.

Gibbins, Richardson, and Waterhouse (1990) discuss the management of both quantitative and qualitative disclosures. They note that companies develop disclosure strategies in response to both internal and external conditions. This study examines the effects of two control variables on forward-looking disclosure choices. Frankle et al. (1995), Healy et al. (1995), Clarkson et al. (1994), Lang and Lundholm (1993), and others suggest that firms that frequently finance externally have a greater incentive to voluntarily release forward-looking information such as earnings forecasts. The reason is that greater disclosure decreases estimation risk (also called perceived risk in equilibrium asset pricing literature) and lowers the cost of capital through the increased price of the firm's securities (Barry & Brown, 1985; Diamond & Verrecchia, 1991; Botosan 1997).¹⁶ Given this contention and potential agency problems (discussed in previous subsection 3.2.3 in this chapter) associated with securities offerings, I predict a positive relationship between forward-looking disclosures and new offerings.

Previous research (e.g., Cahan & Hossain, 1996; and Lev & Penman, 1990) indicates that disclosure of forward-looking information is positively related to firm size because larger firms benefit from some comparative economies of scale and have more resources to expend on forecasting. Based on these arguments, I express the functional form for disclosure as:

$$DISCOR = f(IOS, INSD, OUTDIRDUM, AUDQUAL, NEWOFF, \ln SIZE) \quad (4)$$

¹⁶ An alternative view has been put forward by some researchers. For example, Marquardt and Wiedman (1997) and Welker (1995) argue that greater disclosure enhances securities market liquidity and lowers the cost of capital through reduced bid-ask spread.

The primary variables of interest in this equation are IOS, INSD, OUTDIRDUM, and AUDQUAL.

Disclosure of prospective information may also be influenced by proprietary or competitive disadvantage costs. Clarkson et al. (1994) argue that firms in more capital intensive and/or concentrated industries face greater proprietary costs of disclosure and will as such disclose less future earnings information. However, theoretical (analytical) studies have provided conflicting explanations about the effect of proprietary costs on voluntary disclosure. For example, Verrecchia (1983), and Dye (1985) predict that competition discourages voluntary disclosure while Darrough and Stoughton (1990), and Feltham and Xie (1992) hypothesise that competition encourages voluntary disclosure.

Verrecchia (1990) attributes these competing explanations to the nature of competition examined by the two lines of research. Verrecchia (1983), and Dye (1985) analyse post-entry competition i.e. existing competitors while Darrough and Stoughton (1990), and Feltham and Xie (1992) concentrate on pre-entry competition (i.e., potential competitors). Because firms are likely to face both pre and post entry competition, empirically it is difficult to predict the actual relationship between voluntary disclosure and proprietary cost. Consequently, I do not examine this factor in this thesis.

Good news is another factor which could affect voluntary disclosure of prospective information. Lev and Penman (1990) hypothesise that firms with good news are more likely to disclose earnings forecasts. However, recent studies cast doubt on the good news hypothesis as an explanation for voluntary disclosure. For example, Skinner (1994), Clarkson et al. (1994), and Frankle et al. (1995) find that bad news firms are more likely to disclose information in periods

shortly before public offerings than good news firms. Given the ambiguous relationship between good news and voluntary disclosure, I do not test the good news hypothesis in this study.

Another variable that has been tested in previous studies is information asymmetry. Welker (1995) predicts that firms with more information asymmetries (measured by bid-ask spread) will disclose more information voluntarily in order to increase market liquidity and reduce their cost of equity capital. Since asymmetric information problems are likely to be severe in high IOS firms (Smith & Watts, 1996) and because bid-ask spread is likely to be associated with the measures of IOS, I do not test bid-ask spread as a separate variable in this study.

Jensen and Meckling (1976) and Watts (1977) predict a positive relation between leverage and voluntary disclosure. Although earlier research (e.g., Leftwich et al., 1981; Chow & Wong-Boren, 1987; Craswell & Taylor, 1992) has tested the effect of leverage on voluntary disclosure, the aggregate evidence on the relationship between leverage and voluntary disclosure is not supportive of the predictions of debt contracting hypothesis (Christie, 1990). Furthermore, since historical cost information (e.g., book value of existing tangible assets) is generally used as the basis for debt contracting purposes, disclosure of prospective information is unlikely to be related to the proxies of debt-related agency costs. Therefore, leverage is not considered in this thesis.

3.3 *CHAPTER SUMMARY*

In this chapter I provided background information on the NZ business environment and compared its major features with the US where corporate is tightly controlled compared to the NZ. In doing so I developed a set of hypotheses to test the effects of IOS and other variables on individual policy variables. The cross-sectional tests carried out to examine the hypotheses are presented in chapters 4 to 7.

CHAPTER FOUR

CROSS-SECTIONAL TESTS OF THE RELATIONSHIP BETWEEN OWNERSHIP CONCENTRATION AND IOS

4.0 INTRODUCTION

In this chapter I test empirically H_1 outlined in chapter three. Before presenting the empirical findings, I repeat the main hypothesis with regard to inside ownership below.

H₁: Ceteris paribus, inside ownership will be positively (negatively) related to high (low) IOS.

In addition, I use free cash flow and firm size as control variables. I structure the remainder of the chapter as follows: section 4.1 describes the research design including the sample and model selection procedures, measurement of dependent and independent variables, and sources of data; section 4.2 presents and discusses findings while section 4.3 summarises the chapter.

4.1 RESEARCH DESIGN

4.1.1 SAMPLE SELECTION

The companies covered by my study were selected from the 129 companies listed on the New Zealand Stock Exchange (NZSE) as at 31 December 1995 and in the *Share Market Review* (1995) published by the NZSE. The sample consists of firms that: 1) responded to my written request for annual reports for the period 1991-1995; and 2) agreed to participate in a mail questionnaire survey requesting information about the equity ownership structure, and composition and characteristics of their board of directors in all five years. Ninety-four firms

responded to my requests for annual reports. Of the 94 firms, 80 firms agreed to participate in the mail survey. The survey questionnaire appears in Appendix A. This represents approximately 62 percent of the companies listed in 1995. Data items were extracted primarily from annual reports and are supplemented with information from the Datex manual and the mail questionnaire survey. The H_1 is tested using data from all 80 firms.

Like most empirical research, the data used in my study are subject to problems such as arithmetic errors and coding discrepancies. If these errors induce noise in the database, inferences drawn from my cross-sectional tests may be biased (Courtenay & Keller, 1994; Christie, 1990). Additionally, since 13 percent of the sample firms did not agree to participate in the mail survey, the data set used in my study may be affected by non-response bias.

4.1.2 MODEL SELECTION

To test the hypothesised relations between the policy variables and IOS, I use two alternative measures for each of the four variables examined in my thesis. The first, is a continuous measure. The second is a dichotomous measure. Because managerial ownership, outside directorship, auditing, and disclosure choice variables are interrelated (because they are driven by a common firm specific factor IOS), the governance decisions are likely to be made simultaneously within the firm to realise growth opportunities. For instance, when deciding how to finance growth options, the firm must decide whether to use internal or external equity. If external equity is used, the firm must also decide on the fraction of that equity that will be retained inside the firm as a signal to potential investors (Leland & Pyle, 1977) and as a bond on agency conflicts (Jensen & Meckling, 1976). This in turn leads to the choices of board members, auditors, and disclosures. However, Smith and Watts (1992), Gaver and Gaver (1993), and Barclay and Smith (1995) argue that allowing for interdependencies (simultaneity) among

policy variables would require specification of simultaneous equations. Unfortunately, at present the IOS literature does not provide adequate insights or direction to allow us to identify the structural form of this system of equations.

Agrawal and Kneober (1996), Jensen et al. (1992), and Titman and Wessels (1988) are examples of studies that try to follow a simultaneous equation framework. However, Smith and Watts (1992, p. 269) also comment that :

"If the structure they use is correct, the power of their estimates is increased, but if their structure is incorrect, they impose bias. Given our current knowledge of these empirical relations, we believe progress is better served by documenting robust empirical relations between policy parameters and exogenous variables before attempting to subdivide the relations into component effects".

Therefore, following Smith and Watts (1992), Skinner (1993), Barclay and Smith (1995), and Mian (1996), I specify the policy variables-*IOS* relationships as a reduced form recursive model in which OLS regressions are used for the continuous policy measures and logit regressions are used for the dichotomous policy measures.¹⁷ This approach has two disadvantages. First, it utilises a single equation estimation rather than simultaneous estimations of all equations and, therefore, ignores simultaneity between the dependent and independent variables. Second, the recursive model conceptually assumes an independence of stochastic terms across equations but

¹⁷ Smith and Watts (1992) used a seemingly unrelated model which assumes no relationship between equations. In contrast, I use a recursive model. A recursive model is a system of equations which determines the endogenous variables sequentially. Like the seemingly unrelated model, a recursive model also assumes no relationship of disturbance terms across equations. Indeed, a seemingly unrelated model is a specific type of recursive model (Pindyck & Rubinfeld, 1981).

does not formally check for the unrelatedness of error terms. The results obtained from this model therefore need to be interpreted with caution.

4.1.3 VARIABLE MEASUREMENT

In this section I consider the definition and measurement of variables, sources of data, and the advantages and disadvantages of the proxies representing the dependent and independent variables used in my thesis. Two surrogate measures are used in my study to proxy for inside share ownership. The first is INSD, the percentage of the firm's shares held by inside directors and the top five managers. This variable is used to measure the relative ownership by management. A disadvantage of this measure is that it does not allow for a nonlinear relationship between INSD and managerial performance. Morck et al. (1988) argue that firms that are 5 to 25 percent owned by management are likely to have lower market values. Consequently, I also use a dichotomous measure INSDDUM, as an alternative surrogate for the managerial ownership policy. INSDDUM is coded 1 if management ownership is less than or equal to 5 percent and greater than or equal to 25 percent, and 0 elsewhere. The inside ownership measures are denoted by INSD and INSDDUM. Data on inside (managerial) ownership are obtained from the mail survey and annual reports.

The test of ownership concentration involves three independent variables - IOS, firm size, and free cash flow. IOS is used to test H_1 while firm size and free cash flow are included for control purposes. IOS is measured by five variables used in previous studies. These are: 1) market value of the firm to book value of assets (e.g., Baber, Janakiraman & Kang, 1996; Barclay & Smith, 1995; Smith & Watts, 1992); 2) market to book value of equity (e.g., Cahan & Hossain, 1996; Lang et al., 1996); 3) price-earnings ratio (e.g., Chung & Charoenwong, 1991; Smith & Watts, 1992; and Gaver & Gaver, 1993); 4) advertisement expenditures to firm value (e.g., Bathala et

al., 1994); and 5) capital expenditures to firm value (e.g., Smith & Watts, 1992; Baber et al., 1996).

The market value of the firm to book value assets, MKTBKA, is a measure of the percentage of firm value attributable to assets-in-place and measured growth opportunities. The basic assumption behind the use of this variable as an empirical proxy for the IOS is that firms with more growth options will have market values far in excess of their book values. A higher ratio indicates less reliance on assets-in-place and more on growth options. Thus, growth opportunities and MKTBKA should be positively related. The MKTBKA is computed by the ratio of market value of assets divided by book value of assets, where the market value of assets is defined as the book value of liabilities plus the market value of equity. However, as Gaver and Gaver (1993) point out, this measure of IOS induces bias for firms with long-lived assets and for that reason generates noisy estimates of parameters.¹⁸ Nonetheless, despite certain weaknesses, MKTBKA is the growth measure used most frequently in earlier studies (e.g., Jung, Kim & Stulz, 1996; Mian, 1996).

Another measure which has previously been used by Cahan and Hossain (1996), Barclay et al. (1995), and Gaver and Gaver (1993) to capture the distinction between assets-in-place and growth opportunities is the market to book value of equity MKTBE. As the difference between

¹⁸ There are several additional problems in using MKTBKA as a proxy for IOS. Cross-sectional differences in MKTBKA may also arise because of managerial incentives to manage earnings, and reduce debt contracting costs. Because the extant evidence in positive accounting literature (e.g., Watts & Zimmerman, 1986) suggests that differences in accounting methods are systematically related to firm size, I include firm size in empirical tests to control some of these effects. Moreover, because the difference between market and book values of assets will be owing to growth options and current costs increments (i.e., current market values - book values) and because NZ companies revalue their non-current assets to show the current costs in the financial statements, my measures of IOS (e.g., MKTBKA and MKTBE) are likely to contain less noise than those used in studies based in the US where firms are not allowed to revalue fixed assets (see, for example, Gaver & Gaver, 1993).

the market and book values of equity will, reflect, growth opportunities in the firm (Gaver & Gaver, 1993), the MKTBE measures the value of the firm as a proportion of nongrowth opportunities. Accordingly, MKTBE should increase with increases in growth opportunities. The MKTBE is measured by the proportion of market value of equity to book value of equity. The market value of equity is estimated by shares outstanding multiplied by the share price at calendar year end. A problem with the use of MKTBE is that it also reflects other factors such as the ability of firms to earn monopoly rents on assets-in-place and competition across firms (Ahmed, 1994) and the expected return on equity and risk (Penman, 1996).

The third measure used to proxy for IOS is the P/E ratio. As earnings are related to more assets-in-place, price-earnings ratio should be positively correlated with growth options (Gaver and Gaver 1993). A problem with the use of this measure is that it relies on the market value of corporate shares. Because stock price is affected by securities offerings, this measure of IOS is likely to be sensitive to the capital structure of the firm (Gaver & Gaver, 1993).

To address problems associated with market-based measures of IOS, non-market-based measures (e.g., R & D and advertisement expenditures) have been suggested in the literature as alternative proxies for the firm's IOS.¹⁹ In accord, I use advertising expenditures to firm value as proxy for IOS of the firm. The rationale behind this measure is that expenditure in advertising generates product differentiation and brand loyalty that in turn create growth opportunities (by way of barriers to entry) for the firm. Moreover, advertising expenditures consist largely of discretionary

¹⁹ To reduce data collection costs R & D is not used as a surrogate of IOS. Industry membership is another variable that has been used as a proxy for IOS in previous research (e.g., Chan, Martin & Kensinger, 1990). Because firms operate in multiple industries with different levels of investment opportunities, this measure could reflect industry specific rather than firm specific IOS. Additionally, the industry variables are likely to be correlated with the individual IOS measures included in this study. To avoid multicollinearity between the independent variables and provide a reliable estimate of coefficients, industry membership is not used as a proxy for IOS in this thesis.

expenditures and thus resemble the growth options described by Myers (1977). However, a shortcoming of this measure is that advertising is only one item of the variety of discretionary expenditures (e.g., R & D expenditures) available to managers to create growth options. Because advertising expenditures increase with growth opportunities, positive relationships are posited between advertising expenditures and the agency control mechanisms examined in this thesis. Advertising expenditures to firm value is denoted by ADV.

Another measure which has been used by Smith and Watts (1992) is the ratio of capital expenditures to firm value. They contend that because the value of growth options is an increasing function of positive NPV projects, the ratio of capital expenditures to firm value is likely to be positively related to the policy variables (e.g., inside ownership). Consistent with their prediction, Smith and Watts (1992) document positive relationships between capital expenditures and the financial policy variables. A problem with this measure is that it ignores other components of a firm's investment activity such as acquisitions and research and development and, as a result, may reduce the power of the test. Furthermore, because low growth firms are likely to invest more in tangible assets the relationships between capital expenditures and the policy variables could be negative rather than positive. In this thesis, consistent with Smith and Watts (1992), I predict positive relationships between capital expenditures and inside (managerial) ownership, board composition, auditing, and disclosure policy decisions. Capital expenditures to firm value is denoted by CAPEX, where capital expenditures are defined as cash outlays in the purchase of fixed assets.

Firm size is used to control for the cost of equity ownership from the manager's point of view. As with previous IOS studies (e.g., Mian, 1996), I use book value of assets minus book value of common equity plus market value of common equity as a proxy for firm size. Like Demsetz and Lehn (1985), an inverse relationship is posited between inside ownership and firm size. A

disadvantage of this measure is that it may be sensitive to share price movements. A natural logarithmic transformation is performed to normalise data, and the transformed variable is labelled as *lnSIZE*.

Another control variable for inside ownership is free cash flow. Following Jensen (1986), it is argued that firms with more free cash flow will use inside ownership as a means to circumvent agency costs related to the use of excess cash. Like Bergström and Rydqvist (1990), free cash flow is measured as cash flow from operations minus capital expenditures (fixed assets purchases) minus dividends divided by total assets. A weakness of this measure is that it understates the proxy variable by not incorporating investments in intangibles. For high growth firms, the measure of free cash may be overstated and could bias my tests against finding results consistent with the prediction of Jensen (1986). I denote this as FCF and extract the data from annual reports. Table 4.1 summarises definitions and data sources of dependent and independent variables pertinent to managerial shareownership.

TABLE 4.1

Definitions of Variables Included in Ownership Concentration equations.

Variable	Predicted sign	Definition and data source
INSD	Dependent variable	Percentage of common shares owned by CEO, directors and top five officers. Mail survey and annual report.
INSDDUM	Dependent variable	Coded 1 if managerial ownership is within 5% to 25% range; 0 otherwise. Mail survey and annual report.
MKTBKA	+	Computed as the ratio of firm value to book value of assets where firm value is defined as (Total assets - Total common equity + Market value of common shares). Annual report and Datex manual.
MKTBE	+	Proportion of firm value to book value of common equity. Annual report and Datex manual.
P/E	+	Ratio of price per share to primary earnings per share. Datex manual and annual report.
ADV	+	Ratio of advertisement expenditures to firm value. Mail survey and annual report.
CAPEX	+	Proportion of capital expenditures (fixed assets purchases) to firm value. Annual report and Datex manual.
SIZE	-	Natural logarithm of firm value. Annual report and Datex manual.
FCF	+	Ratio of free cash flow to total assets where free cash is defined as (Operating cash flow - [capital expenditures (fixed assets purchases) + dividend paid]). Annual report.

4.2 RESULTS

Table 4.2 presents descriptive statistics for ownership concentration, IOS, and control variables included in the cross-sectional test. Because the distribution of the firm size variable was skewed, I applied a logarithmic transformation to this variable. This yields an approximately normal distribution and the transformed variable is denoted by *lnSIZE*. The descriptive statistics indicated considerable skewedness for MKTBKA, MKTBE, and P/E. Consequently, scatter plots of the distribution were examined and two extreme values for P/E (110 and 73.3) and one extreme measure common in MKTBKA (9.314) and MKTBE (19.017) were deleted reducing the sample size from 80 to 77 observations.

TABLE 4.2

Descriptive Statistics for Inside Ownership, Individual IOS and Control Variables

Variable ^a	Mean	Median	Std.dev.	Min.	Max.	N ^b
<i>Dependent variables</i>						
INSD	0.174	0.050	0.226	0.000	0.820	77
INSDDUM	0.208	0.000	0.408	0.000	1.000	77
<i>IOS variables</i>						
MKTBKA	1.425	1.115	0.927	0.542	5.846	77
MKTBE	1.622	1.270	1.264	0.318	7.881	77
P/E	11.022	9.950	7.516	-15.790	35.090	77
ADV	0.018	0.004	0.000	0.000	0.574	77
CAPEX	0.045	0.035	0.042	0.000	0.212	77
<i>Control variables</i>						
<i>lnSIZE</i>	7.919	7.940	0.809	6.061	10.132	77
FCF	-0.075	-0.010	0.310	-2.102	0.225	77

^a Variable definitions:

INSD = Common equity held by directors and top five managers/Total shares outstanding;

<i>INSDDUM</i> = to	Indicator variable, which takes a value of 1 if managerial ownership is within the 5% to 25% range; 0 otherwise;
<i>MKTBKA</i> =	Proportion of firm value to book value of assets where firm value is defined as (Total assets - Total common equity + Market value of common shares);
<i>MKTBE</i> =	Ratio of market value of firm to book value of equity shares;
<i>P/E</i> =	Ratio of price per share to primary earnings per share;
<i>ADV</i> =	Ratio of advertisement expenditures to firm value;
<i>CAPEX</i> =	Ratio of to capital expenditures to firm value;
<i>lnSIZE</i> =	Natural logarithm of firm value;
<i>FCF</i> =	Ratio of free cash flow to book value of assets where free cash is defined as (Operating cash flow - [capital expenditure + dividend paid]).

^b The sample size of 77 is after deleting three outliers.

Pairwise Pearson correlation coefficients are provided in Table 4.3. With respect to correlations between individual IOS measures, only *MKTBE* and *MKTBKA* are positively and significantly correlated ($r = 0.911$, $p \leq 0.001$). However, there are no significant correlations between the other IOS variables. These findings are surprising as Gaver and Gaver (1993) found significant correlations among all individual IOS measures. There are two obvious reasons for the contradictory findings. First, because high IOS firms are likely to be prominent in advertising intensive and technology industries (above average capital requirements), the *ADV* and *CAPEX* variables could also proxy for other factors such as brand name advantage and barrier to entry (Ahmed, 1994). Second, the pairwise correlations may lack statistical significance due to the small sample size (77 firms). In contrast, Gaver and Gaver (1993) employed 1,525 US firms in their correlations analyses. *lnSIZE* is significantly correlated with *P/E* and *ADV*. Of the remaining correlations, those between *FCF* and IOS measures are significant on a negative basis. These results are consistent with theoretical predictions of the IOS hypothesis and also support evidence documented in earlier studies (e.g., Smith & Watts, 1992).

TABLE 4.3

Pearson Pairwise Correlations Between Individual IOS Variables and Control Variables*

	MKTBKA	MKTBE	P/E	ADV	CAPEX	lnSIZE	FCF
<i>IOS variables</i>							
MKTBKA	1.000						
MKTBE	0.911 ^a	1.000					
P/E	-0.111	-0.005	1.000				
ADV	0.278	-0.051	-0.196	1.000			
CAPEX	-0.111	-0.045	0.145	-0.108	1.000		
<i>Control variables</i>							
lnSIZE	-0.078	0.143	0.429 ^a	-0.412 ^a	0.042	1.000	
FCF	-0.487 ^a	-0.330 ^b	0.169	-0.462 ^a	0.050	0.164	1.000

* See Table 4.2 variable definitions and sample size.

^a Significant at 0.001 level based on two-tailed test.

^b Significant at 0.01 level based on two-tailed test.

To test H1, I regress the percentage of managers' shareholdings on individual and aggregate IOS measures. Table 4.4 provides the outcome of OLS regressions. Models 1 to 5 provide the results for the five individual IOS measures. The model in each of these equations is highly significant, with explanatory power (R^2) ranging from 13.20 to 16.71 percent. With the exception of CAPEX, all individual IOS measures are correctly signed but none of them are significant, suggesting that IOS is not related to the managerial ownership decision. Therefore, it is possible that NZ companies with greater growth potential could limit agency problems and maximise firm value by means other than managerial ownership, such as cash compensation (Baber et al., 1996; Gaver & Gaver, 1993). However, as discussed below, another possibility is that the relationship between INSD and the agency cost factors is not linear.

TABLE 4.4

Estimated Coefficient (*t*-statistics in parentheses) from OLS regression of Ownership Concentration on Individual or Composite IOS Variables and Control Variables for Firm size and Free Cash Flow^a.

Model	N	Individual IOS variables					Control Variables			Model prob. ^b	R ²
		MKTBKA +	MKTBE +	P/E +	ADV +	CAPEX +	<i>ln</i> SIZE -	FCF +	Incpt. +/-		
1	79	0.007 (0.417)					-0.105 (-3.476) ^c	0.125 (1.368) ^f	1.045 (4.198)	0.0062	15.21
2	79		0.005 (0.337)				-0.119 (-3.481) ^c	0.135 (1.649) ^e	1.121 (4.316)	0.0038	16.71
3	78			0.002 (0.476)			-0.104 (-3.095) ^c	0.115 (1.401) ^f	1.002 (3.895)	0.0145	13.20
4	78				0.168 (0.859)		-0.096 (-2.836) ^d	0.1498 (1.753) ^e	0.962 (3.467)	0.0102	14.08
5	80					-0.623 (-1.040)	-0.098 (-3.208) ^c	0.134 (1.638) ^e	1.014 (4.050)	0.0077	14.41

^a The dependent variable is percentage of common shares held by directors and top five managers. See Table 5.1 for variable definitions. Sample sizes are after deleting one outlier from Models 1 and 2 and two outliers from Models 3 and 4.

^b Model probability is based on a *F*-statistic.

^c Significant at 0.001 level based on one-tailed test.

^d Significant at 0.01 level based on one-tailed test.

^e Significant at 0.05 level based on one-tailed test.

Of the control variables, *lnSIZE* is significant at $\rho < 0.01$ with a negative coefficient in all five models. The observed negative coefficient on the firm size variable supports the view that managers take a larger stake in smaller firms because more equity ownership allows them to economise on internal contracting costs (e.g., cost of risk bearing and internal monitoring expenditures) and thereby enables them to exercise more control over the operating activities of the firm (Agrawal & Knoeber, 1996; Jensen et al. 1992).

Furthermore, as predicted, the coefficient for FCF is significantly and positively ($\rho \leq 0.10$) related to the proportion of inside ownership in all five models. This finding adds weight to the contention that companies with large free cash flow are likely to use ownership concentration (inside ownership) to minimise the risk that managers may act opportunistically and use free cash to invest in low return projects (Jensen, 1986).

4.2.1 ALTERNATIVE DEPENDENT VARIABLE

Following Morck et al. (1988) and McConnell and Serrvaes (1990), I use a nonlinear variable denoted by *INSDDUM* as an alternative proxy for managerial shareownership. *INSDDUM* takes the value of 1 when management ownership is $\geq 5\%$ and $\leq 25\%$ and 0 elsewhere. Because OLS generates inefficient and biased estimates of parameters when there is a dichotomous dependent variable, I use logit regressions to provide a more powerful and reliable test (Stone & Rasp, 1991; Noreen, 1988). In Table 4.5, I present results using *INSDDUM*.

The primary variable of interest, *IOS* is significant at 0.10 level or better and correctly signed in three of the five models estimated. This indicates that in the non-optimal region of *INSD*, i.e.,

TABLE 4.5

Estimated Coefficient (*Wald*-statistics in parentheses) from Logistic Regression of Ownership Concentration on Individual or Composite IOS Variables and Control Variables for Firm Size and Free Cash Flow^a

Model	N	Individual IOS variables				Control variables				Model prob. ^b	<i>Pseudo-R</i> ²
		MKTBKA +	MKTBE +	P/E +	ADV +	CAPEX +	<i>ln</i> SIZE -	FCF +	Incpt +/-		
6	79	0.6347 (3.744) ^c					-0.413 (1.164)	-0.010 (0.011)	1.032 (0.880)	0.071	8.18
7	79		0.301 (1.700) ^d				-0.546 (2.055) ^d	-0.483 (0.339)	2.409 (0.662)	0.161	6.11
8	78			-0.031 (0.319)			-0.443 (1.172)	-0.642 (0.637)	2.311 (0.579)	0.223	5.39
9	78				3.929 (0.322)		-0.349 (0.707)	-0.672 (0.601)	1.268 (0.143)	0.265	4.67
10	80					11.066 (3.167) ^c	0.506 (1.692) ^d	-0.100 (1.640)	2.0160 (0.426)	0.083	7.69

^a The dependent variable is an indicator variable which takes the value of 1 when management ownership is $\geq 5\%$ and $\leq 25\%$, 0 otherwise. See Table 5.1 for variable definitions. Sample sizes are after omitting one outlier from Model 6 and 7 and two outliers from Models 8 and 9.

^b Model probability is based on a *chi*²-statistic.

^c Significant at 0.05 level based on one-tailed test.

^d Significant at 0.10 level based on one-tailed test.

5-25 percent, high growth firms are more likely to use managerial ownership as a control mechanism than low growth firms.²⁰ Of the control variables, *lnSIZE* is significantly associated with *INSDDUM* only at 0.10 level in Models 7 and 10. This finding is also consistent with results reported earlier in Table 4.4. The result with regard to the relationship between *INSD* and *FCF* is not significant, contrary to evidence documented previously in the OLS models.

Gaver and Gaver (1993) point out that individual IOS measures may be imperfect because they are likely to partially measure growth opportunities of the firm. As a consequence, Gaver and Gaver use factor analysis to extract a composite IOS measure from the individual IOS variables. Similarly, I compute an aggregate IOS measure using *MKTBKA*, *MKTBE*, and *P/E*. *ADV* and *CAPEX* are dropped as they reduced the percentage of variance explained by the common factor (Factor 1) to less than fifty percent (Hair, Anderson & Tatham, 1990).

Table 4.6 presents results of factor analysis. Panel A reveals the initial communalities that are estimated from regressing each IOS variable on the other two IOS measures. Panel B shows the percentage of the total variance explained by each of the three factors. Gaver and Gaver (1993) note that the "...number of factors needed to approximate the original correlations among the individual measures is equal to the number of summed eigenvalues needed to extract the sum of the communalities" (p. 137). Because the eigenvalue of the first factor is greater than the sum of the three communalities, I use the first factor as an alternative measure of IOS. Panel C shows pairwise correlation between the first factor, denoted as *IOSFAC*, and individual IOS measures.

²⁰ The positive coefficient on individual and composite IOS measures is also consistent with a signalling hypothesis that predicts a higher level of inside (managerial) ownership in high growth firms owing to asymmetric information (adverse selection problem) between entrepreneur (insider) and outside shareholders (see, for example, Smith & Watts, 1992; Downes & Heinkle, 1982; Leland & Pyle, 1977).

The pairwise correlations indicate that IOSFAC is significantly correlated with MKTBKA and MKTBE. Panel D presents descriptive statistics related to IOSFAC.

TABLE 4.6

Selected Statistics Related to the Factor Analysis of Individual IOS Variables^a

Panel A. Initial communalities of individual IOS variables

MKTBKA	MKTBE	P/E
0.8412	0.8392	0.0671

Panel B. Percentage of variance explained (eigenvalues in parentheses) of three factors

Factor 1	Factor 2	Factor 3
63.9 (1.9183)	33.3 (0.9989)	2.8 (0.0829)

Panel C. Pairwise correlations between IOSFAC (Factor 1) and individual IOS variables

MKTBKA	MKTBE	P/E
0.9790 ^b	0.9719 ^b	-0.1234

Panel D. Descriptive statistics for IOSFAC (Factor 1)^c

Mean	0.000
Median	-0.291
Min.	-1.048
Max.	4.996

^a See Table 4.2 for variable definitions and sample size.

^b Significant at 0.001 level based on two-tailed test.

^c ADV and CAPEX are not included in factor analysis because they reduced the percentage of variance of Factor 1 to less than 50 percent (Hair et al., 1990).

Table 4.7 presents results of regression using aggregate variable IOSFAC. Again, the results are similar to those reported previously: *ln*SIZE and FCF variables being significant at 0.001 and

0.10 respectively in Model 11, but in Model 12, IOSFAC and *ln*SIZE are the only variables that are significantly related to INSDDUM.²¹

TABLE 4.7

OLS and Logit Estimations Results for Composite IOS (IOSFAC) and Control Variables on Inside Ownership

Variable	Predicted sign	Model 11 (OLS)		Model 12 (Logit)	
		Coefficient	t-value	Coefficient	Wald-statistic
<i>IOS variable</i>					
IOSFAC	+	0.002	0.104	0.422	2.109 ^c
<i>Control variables</i>					
<i>ln</i> SIZE	-	-0.105	-3.363 ^b	-0.487	-1.705 ^c
FCF	+	0.125	1.412 ^c	-0.344	-0.155
R ²			14.55%		6.73% [*]
Model Probability			0.0079 ^{**}		0.1360 ^{**}
N			77		77

^a See Table 4.2 for variable definitions. Sample size of 77 is after omitting three outliers.

^b Significant at 0.001 level based on one-tailed test.

^c Significant at 0.10 level based on one-tailed test.

^{*} Represents the *pseudo-R*² is computed as $[c/(n+c)]$, where *c* is the *chi*²-statistic for the overall model and *n* is the total sample size (Aldrich & Nelson, 1984).

^{**} Model probability is based on a *F*-statistic for the OLS regression and a *chi*²-statistic for the logit regression.

²¹ Because IOS literature is still developing, I used an alternative aggregate measure of IOS called IOSDUM to dichotomise the sample into high and low growth sample group. IOSDUM is a dummy variable coded 1 for firms with factor scores exceeding 25 percent on IOSFAC, 0 otherwise. The results remained unchanged and so are not reported.

4.3 CHAPTER SUMMARY

This chapter provided evidence on the link between managerial ownership and IOS. It discussed the sample, model selection procedures, and the composition and the source of data. This chapter also explained why a reduced form recursive model, rather than simultaneous equations, was selected. Additionally, it explained variable measurements and discussed strengths and weaknesses of measures of dependent and independent variables included in analyses. The results obtained from OLS regression indicated that inside ownership was positively related to FCF and negatively related to *lnSIZE*, but no statistical relationship was found between inside ownership and the proxies for IOS. However, H_1 was partially supported only in the logistic models. Thus, this section provides mixed support for the prediction of the IOS hypothesis.

CHAPTER FIVE

CROSS-SECTIONAL TESTS OF THE RELATIONSHIP BETWEEN BOARD COMPOSITION AND IOS

5.0 INTRODUCTION

In this chapter I present the empirical results of the relationship between board composition and the firm's IOS. Hypotheses that were proposed in chapter three are repeated below:

H2: Ceteris paribus, fraction of outside directors will be positively (negatively) related high (low) IOS.

H2_A: Ceteris paribus, fraction of outside directors will be negatively related to inside ownership.

The chapter is organised as follows: section 5.1 describes the research design including the measurement of the variables and the sources of data; section 5.2 presents and discusses the empirical results while the final section summarises the chapter.

5.1 RESEARCH DESIGN

5.1.1 SAMPLE SELECTION

To test Hypotheses 2 and 2_A, I use the same sample utilised as in chapter four.

5.1.2 VARIABLE MEASUREMENT

To measure outside directors' monitoring, I use the percentage of board seats held by independent outside directors. Independent outside directors are defined as individuals who: (1) are not active or retired employees of the firm; or (2) do not have close business ties (e.g., consultant, lawyer, supplier) with the firm. This measure is labelled OUTDIR. The advantage of this measure is that it distinguishes between affiliated outside directors and directors that are truly independent and should enhance the power of the test. A disadvantage of this measure is that it ignores board characteristics that influence the ability of independent outside directors to monitor effectively. For instance, Mennon and Williams (1994) contend that the fraction of independent directors is a noisy proxy because independent directors are unlikely to be effective and objective monitors of management if the board does not meet on a regular basis.

However, the frequency of board meetings could also be a crude measure of outside directors' monitoring, because the quality of interactions between the inside and outside directors and monitoring achieved during board meetings could be related to the composition of board of directors. For instance, a frequently meeting board which includes only insiders may be able to make suboptimal investment decisions more easily than a frequently meeting board that is composed primarily of outside directors. Consequently, as a second measure, I use an interaction of the fraction of independent outside directors and the number of board meetings. I call this measure OUTDIRX. The data on board composition are obtained from the mail survey annual reports.

For models using OUTDIR and OUTDIRX as dependent variables, four independent variables are included. The five IOS variables discussed in chapter 4 are included to test H_2 . INSD is

included to control for ownership structure which is assumed to be predetermined in a chronological sense. Leverage, CEO tenure, and firm size are included as control variables.

Rather than use the simple INSD and INSDDUM as in chapter 4, I separate the percentage of inside ownership variable into piecewise variables to provide a more powerful test. The advantage of a piecewise function over other measures is that it allows for a more precise non-linear relationship between the dependent and independent variables. Moreover, it is reported by Byrd and Hickman (1992, p. 213) that "a simple model does not describe the relationship between [firm performance] and presence of independent directors as accurately as the piecewise model". In line with Morck *et al.* (1988) and Hermalin and Weisbach (1991), I use three piecewise variables related to inside ownership:

INSD 1 = inside ownership if insider (directors and top five managers) ownership <5%, = 5% if insider ownership greater or equal to 5%;

INSD 2 = 0 if insider ownership <5%, = insider ownership minus 5% if 5% less than or equal to insider ownership <25%, = 20% if insider ownership greater than equal to 25%;

INSD 3 = 0 if insider ownership <25%, = inside ownership minus 25% if insider ownership greater than or equal to 25%.

As with previous research (e.g., Bathala & Rao, 1995), I include leverage as a proxy for debt-related agency costs. I measure this variable by the ratio of book value of long term liabilities to total assets. Because book values are used to write debt contracts, this measure more accurately proxies for agency cost of debt. However, the use of leverage ratios suffers from two problems. First, variations in the book value of debt across firms could reflect factors other than debt related to incentive conflicts such as differences in the age of assets or accounting techniques.²² Second, leverage ratios could also proxy for the demand for external equity financing. As noted in a recent paper by Dechow *et al.* (1996), firms that have high leverage

²² A detailed analysis of all of these effects is outside the scope of my study.

ratios arising from large accumulated losses are more likely to make equity issues. Therefore, these measurement problems are likely to create considerable errors in the estimation of regression coefficients. I denote the long term debt to total assets by LEV.

I also include CEO tenure to proxy for power and influence of CEOs in shaping their boards' structure. I measure this variable by the number of years the current CEO has been in office. A problem with this measure is that it ignores firm specific events that influence the tenure of CEOs. For instance, Hermalin and Weisbach (1988) find a significant relation between poor firm performance and CEO turnover. If CEO tenure is correlated with firm performance, this measure will add noise to the measure and reduce the likelihood of observing the predicted effect. I label CEO tenure as CETNR.

Finally, I include firm size because earlier research finds a significant relationship between board composition and firm size. As in chapter 4, I measure it as *lnSIZE*. In Table 5.1, I summarise the definitions and data sources of dependent, independent, and control variables included in examining independent directors' monitoring.

5.2 RESULTS

Table 5.2 presents descriptive statistics for the variables predicted to be affecting board composition. The proportion of outside board members varied between 0% to 100%. The overall mean was 52% indicating, on average, outside directors comprise a majority of board membership. The aggregate mean of inside ownership is 15%, and average number of years the CEO has held the position is 6 years. These results are similar to those reported in prior studies (e.g., Dechow et al., 1996; Mehran, 1995).

TABLE 5.1
Definitions of Variables Included in Board Composition Models*

Variable	Predicted sign	Definition and data source
OUTDIR	Dependent variable	Ratio of independent directors to total directors on the board where independent directors are defined as individuals who: (1) are not active or retired employee of the firm; and (2) do not have extensive business dealings with the firm. Mail survey and annual report.
OUTDIRX	Dependent variable	Percentage of independent directors multiplied by frequency of board meetings. Mail survey and annual report.
INSD 1	-	Inside ownership if insider (directors and top five managers) ownership <5%, = 5% if inside ownership \geq 5%. Mail survey and annual report.
INSD 2	+	0 if insider ownership <5%, = insider ownership minus 5% if 5% inside ownership <25%, = 20% if insider ownership \geq 25%. Mail survey and annual report.
INSD 3	-0	if insider ownership <25%, = inside ownership minus 25% if insider ownership \geq 25%. Mail survey and annual report.
LEV	+/-	Book value of long term debt as a percentage of total assets. Annual report and Datex manual.
CETNR	-	Number of years the current CEO has been in office. Mail survey and telephone contacts.

* See Table 4.1 in chapter 4 for definitions of IOS and firm size variables.

Table 5.3 gives a correlation matrix of IOS and control variables in the data set. As predicted, individual IOS measures such as MKTBKA and MKTBE are significantly and negatively correlated with leverage ($r = -0.409$, $p \leq 0.001$; and $r = -0.379$, $p \leq 0.001$ respectively), providing support for empirical evidence reported in previous IOS research (e.g., Barclay & Smith, 1995; Gaver & Gaver, 1993; and Smith & Watts, 1992). Ownership concentration variables are significantly and negatively correlated with \ln SIZE ($r = -0.430$, $p \leq 0.001$; $r = -0.341$, $p \leq 0.01$; and $r = 0.296$, $p \leq 0.01$ for INSD1 INSD2 and INSD3 respectively), consistent

TABLE 5.2

Descriptive Statistics for Fraction of Outside directors, Individual IOS, Inside Ownership and Control variables^a

Variable ^b	Mean	Median	Std. dev.	Min.	Max.	N ^c
OUTDIR	0.520	0.500	0.273	0.000	1.000	77
OUTDIRX	5.149	5.500	3.180	0.000	12.000	77
<i>Control variables</i>						
INSD 1	0.025	0.050	0.025	0.000	0.050	77
INSD 2	0.057	0.000	0.109	-0.050	0.200	77
INSD 3	0.067	0.000	0.141	0.000	0.570	77
LEV	0.198	0.161	0.202	0.000	0.775	77
CETNR	6.003	5.000	4.188	0.500	18.000	77

^a See Table 4.2 in chapter 4 for definitions and descriptive statistics of individual IOS variables and control variable *lnSIZE*.

^b Variable definitions:

OUTDIR = Number of independent outside directors/Total directors;

OUTDIRX = Frequency of board meetings multiplied by the ratio of independent outside directors to total directors;

INSD 1 = inside ownership if insider (directors and top five managers) ownership <5%, = 5% if insider ownership ≥ 5%;

INSD 2 = 0 if insider ownership <5%, = insider ownership minus 5% if 5% ≤ insider ownership <25%, = 20% if insider ownership ≥ 25%;

INSD 3 = 0 if insider ownership <25%, = inside ownership minus 25% if insider ownership ≥ 25%.

LEV = Ratio of long term liabilities to total assets;

CETNR = Number of years the CEO has been on the job.

^c Sample size of 77 is after omitting three outliers

with the empirical result reported in chapter 4. Table 5.3 also reveals a significant positive correlation between firm size and leverage ($r = 0.283$, $\rho \leq 0.10$). Additionally, Pearson correlations indicate that some of the IOS variables are related to *lnSIZE* at the 0.01 significant level or higher.

Table 5.4 reports OLS results using OUTDIR as a surrogate for outside directors' monitoring. The results show that three of the five individual IOS models are highly significant, with R^2 varying between 19 percent to 24 percent. The computed R^2 statistics indicate that, overall, the explanatory power of regression models is not very strong. These results are similar to those reported in other studies (e.g., Bathala & Rao, 1995: $R^2 = 19\%$; Hermalin & Weisbach, 1991: $R^2 = 10.5\%$; Hermalin & Weisbach, 1988: $R^2 = 16\%$; and Brickley & James, 1987: $R^2 = 26\%$). Four (MKTBKA, MKTBE, P/E, and ADV) of the five individual IOS measures have signs in expected directions. However, only two, MKTBKA and MKTBE, are significant at the 0.01 level or better. There is some evidence, therefore, that corporate investment opportunities increase the complexity of performance assessment and, as such, give managers incentives to use independent directors to mitigate the adverse selection problem and enhance the market value of the firm (Booth & Deli, 1996; Gaver & Gaver, 1993). Additionally, these findings support the view that the use of independent outside directors by high growth firms provides shareholders with an *ex ante* signal that outside directors will protect their long term residual claims (Anderson et al., 1993).

The coefficient on CAPEX variable is incorrectly signed and statistically related to board composition, contrary to H_2 . Following Hermalin and Weisbach (1991), I estimate a piecewise linear regression model to assess the effect of INSD 1, INSD 2, and INSD 3 on OUTDIR. The results indicate that INSD 1 (0 to 5 percent range of share ownership) is significantly related to board composition at the 0.10 level or higher in all five models. This finding is consistent with prior research (e.g., Hermalin & Weisbach, 1991; Bathala & Rao, 1995) and supports H_{2A} . Furthermore, the significant negative coefficient of the INSD 1 variable conforms to the claim of Rediker and Seth (1995) and Brickley and James (1987) that monitoring by outside directors and ownership concentration may be substitute methods of monitoring.

TABLE 5.3Pairwise Pearson Correlation Coefficient Between Individual IOS, Ownership, and Control Variables^a

	MKTBKA	MKTBE	P/E	ADV	CAPEX	INSD 1	INSD 2	INSD 3	LEV	CETNR	lnSIZE
<i>Control variables^c</i>											
INSD 1	0.120	0.008	-0.143	0.102	0.056	1.000					
INSD 2	0.011	-0.042	-0.074	-0.059	-0.058	0.856 ^b	1.000				
INSD 3	-0.116	-0.124	-0.059	-0.026	-0.085	0.448 ^b	0.632 ^b	1.000			
LEV	-0.409 ^b	-0.379 ^b	0.033	-0.155	-0.025	-0.079	0.031	0.037	1.000		
CETNR	0.053	0.056	-0.083	-0.121	-0.066	0.237 ^d	0.204	0.153	-0.120	1.000	
lnSIZE	-0.078	0.143	0.428 ^b	-0.412 ^b	0.042	-0.430 ^b	-0.341 ^c	-0.296 ^c	0.283 ^d	0.050	1.000

^a See Table 5.2 for variable definition and sample size.^b Significant at 0.001 level based on two-tailed test.^c Significant at 0.01 level based on two-tailed test.^d Significant at 0.05 level based on two-tailed test.^e See Table 4.3 in chapter 4 for Pairwise Pearson Coefficient between individual IOS variables.

TABLE 5.4

Estimated Coefficients (*t*-statistic in parentheses) from OLS Regression of Proportion of Independent Outside Directors on Individual IOS Variables and Control Variables for Inside Ownership, Leverage, CEO Tenure and Firm size^a

Mdl	N	Individual IOS Variables					Control Variables						MPrb ^b	R ²	
		MKTBKA +	MKTBE +	P/E +	ADV +	CAPEX +	INSD1 -	INSD2 +	INSD3 -	LEV +/-	CETNR -	lnSIZE +/-			Incpt. +/-
1	79	0.092 (2.776) ^c					-5.518 (-1.920) ^d	-0.174 (-0.291)	-0.036 (-0.131)	0.482 (1.859) ^h	0.005 (0.770)	-0.114 (-2.495) ^f	1.372 (3.767)	0.005	24.0
2	79		0.065 (2.653) ^c				-4.873 (-1.711) ^d	-0.262 (-0.439)	-0.063 (-0.231)	0.479 (1.837) ^h	0.005 (0.769)	-0.133 (-2.78) ^f	1.534 (4.103)	0.007	23.3
3	78			0.003 (0.622)			-4.238 (-1.418) ^e	-0.284 (-0.446)	-0.050 (-0.173)	0.231 (0.882)	0.005 (0.586)	-0.102 (-1.942) ^h	1.382 (3.475)	0.091	15.6
4	80				0.114 (0.218)		-4.350 (-1.427) ^e	-0.274 (-0.424)	-0.087 (-0.307)	0.263 (1.030)	0.006 (0.757)	-0.089 (-1.788) ^h	1.319 (3.202)	0.070	16.1
5	80					-0.438 (-1.734) ^d	-4.209 (1.459) ^e	-0.228 (-0.371)	-0.102 (-0.368)	0.236 (0.938)	0.006 (0.836)	-0.094 (-2.037) ^f	1.355 (3.658)	0.026	19.3

^a The dependent variable is the ratio of number of independent directors to total directors. See Table 5.2 for variable definitions. Sample sizes are after omitting one outlier from Models 1 and 2 and two outliers from Model 3.

^b Model probability is based on a *F*-statistic.

^c Significant at ≤ 0.01 level based on one-tailed test.

^d Significant at ≤ 0.05 level based on one-tailed test.

^e Significant at ≤ 0.10 level based on one-tailed test.

^f Significant at ≤ 0.01 level based on two-tailed test.

^g Significant at ≤ 0.05 level based on two-tailed test.

^h Significant at ≤ 0.10 level based on two-tailed test.

Of the control variables, *lnSIZE* is significant at the 0.10 level or better, with a negative sign in all five models. This fact is consistent with Rosenstein and Wyatt's (1990) contention that smaller firms are more likely to benefit from stock price appreciation surrounding the inclusion of outside board members than larger firms. The coefficient for *LEV* is significantly and positively related to board composition at the 0.10 level in models 1 and 2, suggesting that highly levered firms could be motivated to employ independent outside directors to safeguard against such behaviour as earnings manipulation and misuse of free cash flow (Beasley, 1996; Dechow et al., 1996; Jiambalvo, 1996).

The *CETNR* variable is not statistically related to board composition in any of the five models, suggesting that CEO tenure has no effect on board composition, contrary to the results reported by Hermalin and Weisbach (1988) and Bathala and Rao (1995).²³ However, the evidence of previous research with regard to *CETNR* could be driven by omitted variables that are included in the present study (see chapter 2 of this thesis).

5.2.1 ALTERNATIVE DEPENDENT VARIABLE

I use the frequency of board meetings and the fraction of outside board members interactively to proxy for monitoring by outside directors. To analyse the sensitivity of the results, I repeat the analyses reported in Table 5.4, with *OUTDIRX*. The results (not reported) suggest that the primary coefficients of interest *MKTBKA* and *MKTBE* are significant at the 0.01 level or better and in the direction hypothesised, providing support for H2. Furthermore, the *INSD 1* variable which represents 0% to 5% range of managerial ownership is statistically significant at the 0.05

²³ Following Hermalin and Weisbach (1991) regressions were re-run using piecewise variables for *CETNR*. However, the results remained unchanged, and so are not reported in this thesis.

level or lower in four of the five models, confirming H2_A. Overall, the results are consistent with the previous analyses.

I provide the results of regressions using composite IOS measure in Table 5.5. In models 6 and 7 which use the raw factor scores (IOSFAC) as a surrogate for IOS, the coefficient for IOSFAC is significant at the 0.01 level or better.²⁴ Thus, the proportion of outside directors is higher for firms with high growth options, again providing support for H2. Of the inside ownership and control variables, INSD1, LEV, and *ln*SIZE are significant and in the predicted direction, but INSD2, INSD3, and CETNR are not significant at conventional levels.

²⁴ IOSFAC is estimated using factor analysis on MKTBKA, MKTBE, and P/E. See Table 4.6 for summary statistics related to factor analysis. Additionally, as in chapter 4, I re-estimated regressions using IOSDUM as an alternative measure of composite IOS variable. The results are unchanged.

TABLE 5.5

OLS Estimations Results for Effects of Composite IOS and Control Variables on OUTDIR and OUTDIRX^a

Variable	Predicted sign	Model 6 (OUTDIR)		Model 7 (OUTDIRX)	
		Coefficient	<i>t</i> -value	Coefficient	<i>t</i> -value
<i>Composite IOS variables*</i>					
IOSFAC	+	0.083	2.606 ^c	0.984	2.531 ^c
<i>Control variables</i>					
INSD 1	-	-4.863	-1.843 ^d	-65.977	-1.892 ^d
INSD 2	+	-0.044	-0.066	2.396	0.324
INSD 3	-	-0.013	-0.047	-1.626	-0.487
LEV	+/-	0.474	1.752 ^f	3.716	1.865 ^f
CETNR	-	0.003	0.448	0.035	0.397
lnSIZE	+/-	-0.111	-2.385 ^e	-0.948	-1.874 ^f
Intercept	+/-	1.440	3.967	13.699	3.261
Model probability ^b			0.013		0.039
R ²			22.00%		18.70%
N			77		77

^a See Table 5.2 for variable definitions. Sample size of 77 is after omitting three outliers.

^b Model probability is based on a *F*-statistic.

^c Significant at 0.01 level based on one-tailed probability.

^d Significant at 0.05 level based on one-tailed probability.

^e Significant at 0.05 level based on two-tailed probability.

^f Significant at 0.10 level based on two-tailed probability.

^{*} Computed by using factor analysis. See Table 4.6 in chapter 4 for statistics with regard to factor analysis.

5.3 CHAPTER SUMMARY

This chapter empirically examined the determinants of board composition. The empirical results showed that both OUTDIR and OUTDIRX were significantly and positively related to IOS and LEV and significantly and negatively associated with INSD 1 and *ln*SIZE. In contrast, CEO tenure was found not to be statistically significant. In summary, this chapter provides results consistent with the IOS hypothesis.

CHAPTER SIX

CROSS-SECTIONAL TESTS OF THE RELATIONSHIP BETWEEN AUDITING AND IOS

6.0 INTRODUCTION

The purpose of this chapter is to present the empirical evidence on the relationship between auditing and IOS. The hypotheses outlined in chapter three with regard to auditing are reiterated below:

H₃: Ceteris paribus, costs of audit services (audit quality) will be positively (negatively) related to high (low) IOS.

H_{3A}: Ceteris paribus, costs of audit services (audit quality) will be negatively related to inside ownership.

H_{3B}: Ceteris paribus, costs of audit services (audit quality) will be negatively related the fraction of outside directors.

Furthermore, I control for new offerings, number of segments, receivables and inventory, and firm size. The remainder of this chapter is organised into three sections. In section 6.1, I describe the research design including the sample and the measurement of variables. In section 6.2, I document the relationship between auditing and the IOS and control variables. A summary is provided in section 6.3.

6.1 RESEARCH DESIGN

6.1.1 SAMPLE SELECTION

To test hypotheses 3, 3_A, and 3_B, I use the 80 firms which were included in the sample used for tests in chapters 4 and 5.

6.1.2 VARIABLE MEASUREMENT

Two alternative measures are used to proxy for monitoring from auditors. These measures are used as dependent variables in the models testing H_3 . First, consistent with prior research (e.g., Anderson et al., 1993), I use the sum of dollar outlays on external and internal audits as a proxy for monitoring provided by auditing. This measure is denoted by TAUD. Because this proxy uses a comprehensive definition (by including internal audit costs) to measure monitoring from auditing, it is likely to increase the power of my test. A shortcoming of this proxy is that it excludes non-audit services (advisory services), but certain non-audit services could represent the purchase of expertise related to monitoring (e.g., system consulting). Like most earlier studies (e.g., Johnson et al., 1995), the natural log of total audit costs, \ln TAUD, is used to reduce skewness involving this variable.

In an attempt to circumvent the above problem, I use an alternative proxy called audit quality to measure the effectiveness of monitoring and control derived from auditing. DeAngelo (1981, p. 186) defines audit quality as the "market-assessed joint probability that a given auditor will both (1) discover a breach in the client's accounting system, and (2) report the breach". That is, audit quality is a function of the competence and independence of an auditor that help to mitigate incentive conflict between managers and the fixed and residual claimants. I use a Big Six and non-Big Six dichotomy to proxy for audit quality. This proxy is used because the Big Six firms dominate the New Zealand audit market (Johnson et al., 1995). Furthermore, DeAngelo (1981) suggests that audit firm size is a reasonable proxy for audit quality. I label this dummy variable AUDQUAL. Data on AUDQUAL and TAUD are obtained from annual reports, the mail survey, and data from the Datex manual.

Eight independent variables are included in models testing H_3 . The IOS variables, previously described, are used to test the relationship between auditing and IOS. The INSD variable is defined in the previous chapter and is included to proxy for the agency cost of external equity. Based on substitution arguments advanced in chapter 3, a negative relationship is posited between auditing (as proxied by total audit costs) and the fraction of independent outside directors. This prediction contradicts some earlier literature. For instance, using the percentage of outside directors as a proxy for monitoring, Ettredge, Simon, Smith, and Stone (1994) find a positive rather than a negative relationship between auditing and the proportion of non-executive (outside) directors. However, there are two problems with the previous measure. First, Ettredge et al. (1994) do not distinguish between affiliated (grey directors) and independent non-executive directors. Second, they assume a linear relationship between audit and the proportion of independent outside directors.

To improve on the previous measure, I use the fraction of independent directors as a non-linear variable which is coded 1 if the fraction of outside directors is in the "optimal range" (40 to 60 percent), and 0 if the fraction is outside the 40 to 60 percent range. As with the measure of prior studies (percentage of outside directors), the alternative dichotomous proxy could introduce noise in my measure because it does not divide the independent directorships into partially optimal and non-optimal regions (Byrd & Hickman, 1992). Independent directorship is denoted by OUTDIRDUM.

The control variables which are derived primarily from the audit pricing literature include measures for leverage, new offerings, number of segments, receivables and inventory, and firm size. Leverage has been discussed in chapter five. New offerings are used because prior research (e.g., Francis & Wilson, 1988; DeFond, 1992) has documented a significant positive relationship between monitoring from auditing and the issuance of debt/equity. A measure frequently

employed in the previous literature as a proxy for demand for external financing is the ratio of proceeds from securities issues to book value of total assets. However, the use of this measure is thought to be problematic (Dechow et al. 1996) because it reflects *ex post* rather than *ex ante* demand for external financing. For example, if a firm has sufficient internal funds to fuel growth for several years, managers are less likely to buy high-priced audit services to signal their private information.

Based on this reasoning I use an *ex ante* measure, NEWOFF, similar to that found in Dechow et al. (1996), which takes the value of 1 if the firm's internal funds are less than -0.5, and 0 otherwise. Internal funds are defined as cash flow from operation minus capital expenditures divided by current assets. The justification for this measure is that if a firm's internal funds are less than -0.5, it is likely to be closer to exhausting its available internal resources in the near future and will need to increase monitoring. A problem with this measure is that the cutoff -0.5 is subjective.

Because most earlier studies (e.g., Ettredge et al., 1994) have found a significant positive relation between the number of the client's business segments and the demand for monitoring and control by auditors, I include this measure as a proxy for client firms' complexity. This variable is expected to be positively related to $\ln\text{TAUD}$. I label it $\ln\text{SEGS}$. A natural logarithmic transformation is used to normalise distribution of the data set.

I also include receivables and inventory as a control for audit complexity. Because auditors expend extra efforts in reviewing these accounts this variable is expected to be positively associated with $\ln\text{TAUD}$. I denote receivables and inventory to total assets as RECINV .

Firm size is defined as in chapter 4. Because audit fees will be higher for larger size, this variable is likely to be positively related to \ln TAUD. I summarise the foregoing discussions in Table 6.1.

TABLE 6.1
Definitions of Variables Included in Audit Costs and Audit Quality Models*.

Variable	Predicted sign	Definition and data source
\ln TAUD	Dependent Variable	Natural log of the sum of dollar outlays on external and internal audits. Annual report, Datex manual and mail survey.
AUDQUAL	Dependent variable	An indicator variable coded 1 if the auditor is from a Big Six accounting firm, 0 otherwise. Annual report and Datex manual.
OUTDIRDUM	-	Nonlinear dummy variable coded 1 if the percentage of independent directors is within 40 to 60 percent region and 0 if outside the 40 to 60 percent range. Mail survey and annual report.
NEWOFF	+	An <i>ex ante</i> measure of a firm's demand for external financing. This is an indicator variable coded 1 if a firm's internally generated fund is less than -0.5, and 0 otherwise where internally generated fund is defined as (operating cash flow - capital expenditures)/current assets. Annual report and Datex manual.
\ln SEGS	+	Natural logarithm of number of business segments reported. Annual report.
RECINV	+	Amount of receivables and inventories as a percentage of total assets. Annual report.

* See Table 4.1 in chapter 4 for definitions of IOS and firm size variables, and Table 5.1 in chapter 5 for inside ownership and leverage variables.

6.2 RESULTS

Table 6.2 gives descriptive statistics for the dependent, IOS, and control variables included in this study. The mean expenditure on auditing is \$5.091 million, and the audit costs varied between \$3.699 million to \$6.675 million.

Pairwise correlation analysis was conducted as the first step in examining the hypotheses outlined above. Correlations regarding the IOS, ownership, directorship and control variables are presented in Table 6.3. Because the IOS, ownership, directorship, and control variables are correlated, multivariate analyses were considered appropriate.

Table 6.4 provides the multiple regression results. Models 1 to 5 are highly significant and have R^2 's in excess of 80 percent. Of the individual IOS measures, MKTBKA, MKTBE, and ADV are statistically significant at the 0.05 level or better, indicating that auditors provide important monitoring for outside stakeholders as the measurement of managerial performance becomes more difficult in companies with high growth options. This finding is also consistent with the positive linkage between audit costs and IOS reported in prior research (e.g., Anderson et al., 1993). The empirical evidence thus supports H3. The coefficients for optimal levels of managerial ownership, INSD 1 and INSD 3, are not significant, contrary to H3_A. However, INSD 2 which represents the suboptimal range of managerial ownership (Morck et al., 1988) is statistically significant at the 0.10 level in models 1 to 3 but, contrary to expectations, carries a negative rather than a positive sign. This evidence suggests that as agency (entrenchment) problems arising from a high level of managerial ownership increase, expenditures on auditing decrease.

TABLE 6.2
Descriptive Statistics for Total Audit Expenditures, Individual IOS, Inside Ownership, Directorship
and Control Variables^a

Variable ^b	Mean	Median	Std.dev.	Min.	Max	N ^c
<i>Dependent variables</i>						
<i>lnTAUD</i>	5.091	5.097	0.645	3.699	6.675	77
<i>AUDQUAL</i>	0.896	1.000	0.307	0.000	1.000	77
<i>Directorship variable</i>						
<i>OUTDIRDUM</i>	0.727	1.000	0.448	0.000	1.000	77
<i>Control variables</i>						
<i>NEWOFF</i>	0.104	0.000	0.307	0.000	1.000	77
<i>lnSEGS</i>	0.470	0.477	0.193	0.301	1.146	77
<i>RECINV</i>	0.290	0.253	0.240	0.000	1.129	77

^a See Table 4.2 in chapter 4 for definitions and descriptive statistics of individual IOS variables and control variable *lnSIZE*. Table 5.2 in chapter 5 for definitions and descriptive statistics for inside ownership and leverage variables.

^b Variable definitions:

lnTAUD = Natural logarithm of internal and external audit costs.

AUDQUAL = Indicator variable coded 1 for big 6 and 0 otherwise.

OUTDIRDUM = Nonlinear dummy variable coded 1 if fraction of independent directors is in the 40 to 60 percent region and 0 if outside the 40 to 60 percent range.

NEWOFF = An *ex ante* measure of a firm's planned external financing. Coded 1 if the firm's internally generated fund (cash) is less than -0.5, and 0 otherwise. Where internal finance is defined as (cash from operations - capital expenditures)/ current assets;

lnSEGS = Natural logarithm of the number of segments reported in the annual report.

RECINV = Ratio of accounts receivables and inventory to total assets.

^c Sample of 77 firms is after elimination of three outliers.

TABLE 6.3

Pairwise Pearson correlations between Individual IOS, Directorship and Control Variables^a

	MKTBKA	MKTBE	P/E	ADV	CAPEX	INSD 1	INSD 2	INSD 3	OUTDIR DUM	LEV	NEW OFF	lnSEGS	RECINV	lnSIZE
<i>Directorship variable^c</i>														
OUTDIRDUM	-0.005	0.009	-0.075	0.078	-0.145	0.021	0.040	0.093	1.000	-0.093				
<i>Control variables</i>														
NEWOFF	0.391 ^b	0.266 ^d	-0.411 ^b	0.314 ^c	0.169	0.153	0.086	0.030	0.017	-0.024	1.000			
lnSEGS	-0.083	-0.079	0.125	-0.053	0.090	-0.095	-0.095	-0.080	-0.115	0.063	0.029	1.000		
RECINV	-0.026	-0.030	0.061	0.041	0.052	-0.061	-0.143	-0.105	-0.048	-0.157	-0.154	0.041	1.000	
lnSIZE	-0.078	0.143	0.429 ^b	-0.412 ^b	0.042	-0.430 ^b	-0.341 ^c	-0.296 ^c	-0.027	0.283 ^d	-0.224 ^d	0.357 ^c	-0.012	1.000

^a See Table 6.2 for variable definition and sample size.

^b Significant at 0.001 level based on two-tailed test.

^c Significant at 0.01 level based on two-tailed test.

^d Significant at 0.05 level based on two-tailed test.

^e See Table 4.3 in chapter 4 for Pairwise pearson coefficient between individual IOS variables; and Table 5.3 in chapter 5 for Pairwise pearson coefficient between ownership variables and leverage.

TABLE 6.4

Estimated Coefficients (*t*-statistics in parentheses) from OLS Regression of TAUD on Individual or Composite IOS Variables and Control Variables for Inside Ownership, Leverage, Board Composition, New Offerings, Number of Segments, Receivables and Inventories, and Firm Size^a.

Mdl.	N	Individual IOS Variables						Control Variables									Mdl prb ^b
		MKTBKA +	MKTBE +	P/E +	ADV +	CAPEX +	INSD1 -	INSD2 +	INSD3 -	OUTDIR DUM -	LEV +/-	NEW OFF +	lnSEGS +	RECIN +	lnSIZE +	Incpt. +/-	
1	79	0.112 (2.711) ^d					1.555 (0.464)	-1.022 (-1.444) ^f	0.018 (0.055)	0.059 (0.789)	0.264 (0.392)	0.156 (1.264)	0.482 (2.597) ^d	0.487 (3.406) ^e	0.606 (10.578) ^e	-0.252 (-0.543)	0.000
2	79		0.056 (1.945) ^f				2.086 (0.610)	-1.094 (-1.511) ^f	-0.045 (-0.137)	0.060 (0.778)	0.232 (0.736)	0.201 (1.619) ^f	0.507 (2.658) ^d	0.482 (3.290) ^e	0.581 (9.851) ^e	0.004 (0.008)	0.000
3	78			-0.005 (-0.103)			2.545 (0.712)	-1.160 (-1.530) ^f	-0.183 (-0.536)	0.057 (0.721)	0.120 (0.383)	0.266 (2.052) ^f	0.455 (2.305) ^d	0.469 (3.162) ^e	0.593 (9.394) ^e	0.028 (0.058)	0.000
4	80				1.594 (2.632) ^d		1.630 (0.488)	-0.816 (-1.133)	-0.085 (-0.277)	0.073 (0.977)	0.002 (0.009)	0.207 (1.744) ^f	0.423 (2.274) ^d	0.436 (3.146) ^e	0.660 (11.260) ^e	-0.470 (-1.010)	0.000
5	80					0.917 (1.064)	2.579 (0.728)	-0.698 (-0.953)	-0.167 (-0.513)	0.071 (0.907)	0.048 (0.250)	0.261 (2.088) ^f	0.474 (2.439) ^d	0.452 (3.111) ^e	0.575 (10.047) ^e	-0.008 (-0.018)	0.000

^a The dependent variable is the sum of external and internal audit costs. See Table 6.2 for variable definitions. Sample sizes are after deleting one outlier from Models 1 and 2 and two outliers from Model 3.

^b Model probability is based on a *F*-statistic.

^c Significant at 0.001 level based on one-tailed test.

^d Significant at 0.01 level based on one-tailed test.

^e Significant at 0.05 level based on one-tailed test.

^f Significant at 0.10 level based on one-tailed test.

Byrd and Hickman (1992) document that firms with 40 to 60 percent independent outside directors perform better than firms where outside directors hold either below 40 percent or greater than 60 percent of board seats. Thus prior empirical evidence implies that the relationship between audit costs to proportion of independent outside directors may be nonlinear. Accordingly, I specify the fraction of independent outside directors as a nonlinear variable which is a coded one if the fraction of independent board members is in the 40 to 60 percent range, and zero if outside the 40 to 60 percent region.

The result shows that the effect of *OUTDIRDUM* on audit costs is not statistically significant. Therefore, contrary to $H3_B$, it does not appear that the percentage of independent directors is an important factor in influencing the demand for monitoring and control by auditors. Of the control variables, *lnSIZE*, and *RECINV* are statistically significant at 0.001 level in all five models. These results are also consistent with that reported in another NZ study by Johnson et al. (1995). Also as expected, the coefficient on the *lnSEGS* variable is positive and statistically significant at the 0.01 level in all five models, indicating that audit costs are an increasing function of the number of the client's business segments. Additionally, the coefficient of *ex ante* demand for external finance denoted by *NEWOFF* is positive and statistically significant at the 0.10 level or better in models 2 to 5. This evidence therefore conforms to the view that firms expecting to issue securities will purchase more audit services as these can improve their public image and enables them to lower the cost of capital (Dechow et al., 1996; Johnson & Lye, 1990; Francis & Wilson, 1988).

LEV is not significant in all five models, contrary to the evidence documented in earlier research (e.g., Francis & Wilson, 1988). However, earlier empirical evidence concerning the relation between *LEV* and audit costs could be spurious because previous research failed to control for

IOS which is theoretically and empirically related to LEV (Barclay & Smith, 1995; Smith & Watts, 1992).

6.2.1 ALTERNATIVE DEPENDENT VARIABLE

To investigate the relationship between IOS, ownership, directorship, and control variables and auditing, I use audit quality as an alternative proxy for monitoring. The most widely used proxy for audit quality in positive accounting research is an indicator variable for Big Six/non-Big Six membership (e.g., Clarkson & Simunic, 1994; Feltham et al., 1991). Therefore, the alternative dependent variable used in my study is:

$$\begin{aligned} \text{AUDQUAL} &= 1 \text{ if a company employs a Big Six audit firm,} \\ &= 0 \text{ if a company employs a national or a local audit firm.} \end{aligned}$$

The multivariate results (not reported) using this alternative specification of auditing indicate that three (MKTBKA, MKTBE and P/E) of the five IOS variables are positively signed and statistically significant at the 0.10 level or better, confirming H3. ADV was found to be significant in the audit cost model, but it is not significant with the alternative proxy, indicating that advertising is not related to audit quality. The coefficients on INSD variables are both correctly signed and significant at the 0.10 level or higher, providing support for H3_A. Also, as expected, OUTDIRDUM is significant and has a negative sign. This finding not only confirms H3_B but also supports the view that outside directors and auditing are substitute mechanisms of agency control (Anderson et al., 1993). However, contrary to the OLS results reported earlier, none of the control variables, i.e., LEV, NEWOFF, *ln*SEGS, RECINV, and *ln*SIZE are significant in models using AUDQUAL, suggesting that these variables have no effect on audit quality.

Table 6.5 presents results that examined the effects of IOSFAC on audit costs and audit quality.²⁵ The results show that IOSFAC is positively signed and significant at the 0.10 level or better in models 6 and 7 confirming the results reported in Table 6.4.

With regard to ownership, directorship, and control variables, the results are similar to those in the first five models, and in concert with findings for the alternative dependent variables (not reported), the results in model 7 are supportive of H3_A and H3_B.

6.3 CHAPTER SUMMARY

In this chapter, I tested the effects of IOS, inside ownership, directorship, and control variables on audit costs and audit quality. I documented that IOS was significantly related to both *lnTAUD* and *AUDQUAL*. In contrast, I found that ownership and directorship variables were significantly related only to *AUDQUAL*. Additionally, I found that four of the five control variables, i.e., *NEWOFF*, *lnSEGS*, *RECINV*, and *lnSIZE* were significant in the expected direction. *LEV* was not statistically related to either *lnTAUD* or *AUDQUAL*.

²⁵ IOSFAC is determined by factor analysis. See Table 4.6 in chapter 4 for data with regard to factor analysis. The results remained unaltered when *IOSDUM* was substituted for *IOSFAC*. To economise on space I do not report the results using this alternative measure.

TABLE 6.5

OLS and Logit Estimations Results for Effects of Aggregate IOS and Control Variables on Total (external and internal) Audit costs and Audit quality^a.
(Dependent variable in parentheses)

Variable	Predicted sign	Model 6 (LTAUD)		Model 7 (AUDQUAL)	
		Coefficient	t-value	Coefficient	Wald-statistics
<i>Composite IOS variables**</i>					
IOSFAC	+	0.093	2.442 ^c	0.823	1.585 ^c
<i>Ownership variables</i>					
INSD 1	-	2.042	0.591	-125.775	6.904 ^c
INSD 2	+	-1.100	-1.503 ^c	19.570	4.547 ^d
INSD 3	-	-0.094	-0.282	-6.674	3.162 ^d
<i>Directorship variable</i>					
OUTDIRDUM	-	0.060	0.783	-1.544	2.323 ^e
<i>Control variables</i>					
LEV	+/-	0.323	1.018	3.259	0.891
NEWOFF	+	0.163	1.288 ^c	-0.350	0.048
lnSEGS	+	0.500	2.599 ^c	2.318	0.465
RECINV	+	0.491	3.343 ^b	0.047	0.001
lnSIZE	+	0.586	10.026 ^b	0.049	0.004
Intercept	+/-	0.046	0.100	2.772	0.188
R ²			82.05%		31.15%.
Model probability ^f			0.000		0.085
N			77		77

^a See Table 6.2 for variable definitions. Sample size of 77 firms is after omitting three outliers.

^b Significant at 0.001 level based on one-tailed test.

^c Significant at 0.01 level based on one-tailed test.

^d Significant at 0.05 level based on one-tailed test.

^e Significant at 0.10 level based on one-tailed test.

^f Model probability is based on a *F*-statistic for the OLS regression and a *chi*²-statistic for the logit regression.

* Represent *pseudo-R*² computed as $[c/(n+c)]$, where *c* is the *chi*²-statistic for overall model and *n* is the total sample size (Aldrich & Nelson, 1984).

** Computed using factor analysis. See Table 4.6 in chapter 4 for results related to factor analysis.

CHAPTER SEVEN

CROSS-SECTIONAL TESTS OF THE RELATIONSHIP BETWEEN DISCLOSURE AND IOS

7.0 INTRODUCTION

In this chapter I report empirical results on the link between IOS and voluntary information about the growth prospects of the firm. I reiterate four hypotheses proposed in chapter 3 below:

H4: Ceteris paribus, voluntary disclosure of prospective information will be positively (negatively) related to high (low) IOS.

H4_A: Ceteris paribus, voluntary disclosure of prospective information will be negatively related to inside ownership.

H4_B: Ceteris paribus, voluntary disclosure of prospective information will be negatively related to the fraction of outside directors.

H4_C: Ceteris paribus, voluntary disclosure of prospective information will be negatively (positively) related to high (low) quality auditors.

Moreover, drawing on previous studies, I include new offerings and firm size for control purposes. The remainder of the chapter is structured in three sections: Section 7.1 describes the research design which includes the sample and variables; section 7.2 contains results; and section 7.3 is a summary.

7.1 RESEARCH DESIGN

7.1.1 SAMPLE SELECTION

To test hypotheses with regard to the link between disclosures and IOS, I use 80 firms that met

the selection criteria discussed in chapter four.

7.1.2 *VARIABLE MEASUREMENT*

As noted in chapter 3, disclosure of prospective information is a way by which firms may mitigate incentive problems between managers and outside capital providers. Because NZ accounting standard FRS-29 does not require that the prospective information be provided in the MD & A section (i.e., Chairman's report) of the annual report, the current practices in NZ vary considerably, with some companies releasing prospective information in prospectuses, while others provide such information in the Chairman's statement portion of the annual report (Mak, 1991).

Although some observers might argue that information contained in the MD & A section is superficial (because it is unaudited) and one-sided (good news bias), Bryan (1997) rejects this notion by showing a positive relation between short-term firm performance (as proxied by abnormal securities returns) and the level of prospective information in US companies. Similarly, Clarkson et al. (1994) provides Canadian evidence which supports the view that disclosures in the MD & A section are useful to annual report users. Indeed, given the relatively unregulated environment in NZ, firms are more likely to provide prospective information voluntarily to facilitate securities offerings (by alleviating adverse selection problem) and to create a higher market value (Mak, 1996).

A number of measures have been used in the literature to proxy for disclosure. Botosan (1997) and Malone et al. (1993) have reported that disclosure is an abstract concept which cannot be measured precisely. Nevertheless, these researchers contend that a disclosure index (constructed by the researchers) is a useful instrument which can be utilised to gauge the level of information

disclosed by a company in its annual reports. However, the disclosure index suffers from at least two problems: (i) the development and application of a disclosure index involves arbitrary judgements by the researcher; and (ii) it incorporates items that are redundant from users' (analysts') standpoint. Because trivial accounting data are not used for contracting purposes, the application of a general disclosure index is likely to generate a low-power test and yield results contrary to the predictions of contracting cost theory.²⁶

To address the above problems, recent studies (e.g., Lang & Lundholm, 1996; Welker, 1995) have used disclosure index data produced by the US Financial Analysts Federation (FAF). One advantage of this disclosure index is that it is created by independent, knowledgeable experts. However, a disadvantage of this measure is that the FAF tends to evaluate or rate disclosures of only those companies that are large in terms of size and have a large analysts following (Botosan 1997). Therefore, results of studies using this index may not be generalisable to the entire firm population.

Therefore, I use a measure similar to that of Cahan and Hossain (1996) and Frost (1997), counting the number of future-oriented information items actually disclosed by the firm. Rather than begin with a predetermined list, an independent rater (graduate accountant) and I read a sample of reports (10 percent) to identify and ascertain the type and number of forward-looking items actually disclosed by each firm. The Pearson correlation coefficient (r) between our ratings was 0.846, which indicates that identification of disclosed items was largely unambiguous and that subjectivity was minimal. It should be noted that our task was to measure the extent of disclosure rather than to assess disclosure quality. The final list relating to the types of comments made about future prospects by chairmen or managing directors is shown in Appendix B. To

²⁶ For this reason Chow and Wong-Boren (1987) failed to document significant relationships between disclosure levels and leverage and assets-in-place in Mexican firms.

assess the extensiveness of disclosure, all the annual reports of the remaining 90 percent of the sample firms were read by the independent rater to arrive at the number of items related to future prospect being disclosed. However, all ambiguities in evaluating disclosures were discussed and resolved by us.

To avoid bias in the interpretation of the annual reports, multiple points are not given for multiple references of same items. Nevertheless, my measure has some limitations. First, because large firms have more growth prospects and more ability to expend on disclosures, my measure could create bias and reduce the likelihood of observing predicted results. Second, because the number of items of future-oriented information is a discrete variable which takes only positive values (ranging from 1 to 84), the OLS model which assumes continuous dependent variable may not be technically appropriate (Mak, 1996). I label the disclosure score DIS.

Six independent variables are included in the disclosure models. IOS variables are exogenously determined in both models and are utilised to examine H4. INSD, OUTDIRDUM, AUDQUAL are included as independent variables to test H_{4A} , H_{4B} , and H_{4C} . As in chapter 4, INSD is operationalised using piecewise variables. Also as in chapter 4, an indicator variable is used to measure OUTDIRDUM. Because corporate performance increases (agency problems decrease) at an optimal range of an independent directorship, a negative relationship is predicted between proxies of disclosures and OUTDIRDUM. The link between disclosure and AUDQUAL is proxied by a dummy variable that is coded 1 if the company is audited by one of the Big Six audit firms, and 0 otherwise. Using the argument of the substitution hypothesis (see, for example, Rediker & Seth, 1995), a negative relationship is posited between audit and measures of disclosures of forward-looking information.

I incorporate NEWOFF and *lnSIZE* variables in the models for control purposes. Because NEWOFF can create adverse selection problems between existing shareholders and potential investors, I posit a positive relationship between measures of voluntary disclosure and NEWOFF. I include firm size as a control for cost for disclosing information (Malone et al. 1993). Because large companies have relatively smaller costs of accumulating and disseminating information, they are more likely to be able to meet the increased costs of disclosure than small firms. Consequently, large firms are likely to disclose more information than smaller firms. As with previous research, I predict a positive relationship between disclosure of prospective information and firm size. As before, I measure firm size as a natural log of firm value. I provide a summary of definitions and data sources of independent variables included in the disclosure equation in Table 7.1.

TABLE 7.1

Definitions of Variables Included in DIS Model*.

Variable	Predicted sign	Definition and data source
DIS	Dependent variable	Number of forward looking information actually disclosed. Annual report.

* See Table 4.1 in chapter 4 for definitions of IOS and *lnSIZE* variables; Table 5.1 in chapter 5 for INSD1, INSD2 and INSD3; and Table 6.1 in chapter 6 for OUTDIRDUM, AUDQUAL, and NEWOFF variables.

7.2 RESULTS

Table 7.2 provides descriptive statistics for the dependent variable. The descriptive statistics show that there is diversity in the disclosure of prospective information across firms. While the number of forward-looking items ranged from 1 to 84, the mean disclosure score for the sample is only 13.

The Pearson pairwise correlations presented in Table 7.3 indicate that the audit variable denoted by audit quality is significantly and negatively correlated with INSD1. With regard to the control variables, NEWOFF is statistically correlated with measures of IOS. Thus higher growth firms, when measured by MKTBKA, MKTBE and ADV, are more likely to plan to issue securities in the immediate future than low growth firms.

TABLE 7.2

Descriptive Statistics for Disclosure, Individual IOS, Inside Ownership, Directorship, Audit, and Control Variables^a

Variable ^b	Mean	Median	Std.dev.	Min.	Max.	N ^c
<i>Dependent variable</i>						
DIS	13.403	11.000	11.785	1.000	84.00	77

^a See Table 4.2 in chapter 4 for definitions and descriptive statistics of individual IOS variables and control variable *lnSIZE*. Table 5.2 in chapter 5 for definitions and descriptive statistics of ownership variables; and Table 6.2 in chapter 6 for definitions and descriptive statistics of directorship, AUDQUAL variables, and the control variable NEWOFF.

^b Variable definitions:

DIS = Number of forwardlooking information actually disclosed.

^c Sample of 77 firms after omitting three outliers.

To test H4, H4_A, H4_B, and 4_C, I regress DIS on individual IOS, ownership, directorship, audit, NEWOFF, and *lnSIZE*. I report these results in Table 7.4. Models 1 to 5 are highly significant with R²s ranging from 45 percent to 47 percent. Of the individual IOS variables, MKTBKA, MKTBE, and ADV are significantly and positively related to DIS at 0.05 level or better, indicating that in order to mitigate the information asymmetry problem and lower their cost of capital, high-growth firms are more likely to provide prospective information than low-growth firms. This evidence not only lends credence to H4 but also provides support for results reported in the previous literature (e.g., Botosan, 1997, Lang & Lundholm, 1996; Welker, 1995). In contrast, P/E and CAPEX are not significant at conventional level.

TABLE 7.3

Pairwise Pearson Correlation among IOS, Ownership, Directorship, Audit, and Control Variables^a

	MKTBKA ^f	MKTBE	P/E	ADV	CAPEX	INSD1	INSD2	INSD3	OURDIR DUM	AUDQUAL	NEW OFF	lnSIZE
<i>AUDIT</i>												
AUDQUAL	0.039	0.080	0.202	0.022	0.075	-0.235 ^d	-0.084	-0.143	0.114	1.000		
<i>Control variables</i>												
NEWOFF	0.391 ^b	0.266 ^d	-0.411 ^b	0.314 ^c	0.169	0.153	0.086	0.030	0.013	-0.024	1.000	
lnSIZE	-0.078	0.143	0.429 ^b	-0.412 ^b	0.042	-0.430 ^b	-0.341 ^c	-0.296 ^c	-0.065	0.208 ^c	-0.224 ^d	1.000

^a See Tables 6.2 for variable definitions and sample size.

^b Significant at 0.001 level based on two-tailed test.

^c Significant at 0.01 level based on two-tailed test.

^d Significant at 0.05 level based on two-tailed test.

^e Significant at 0.10 level based on two-tailed test.

^f See Table 4.3 in chapter 4 for Pairwise Pearson coefficients between individual IOS variables; Table 5.3 in chapter 5 for Pearson pairwise coefficients between the inside ownership variables; and Table 6.3 in chapter 6 for directorship variables.

TABLE 7.4

Estimated Coefficients (*t*-statistics in parentheses) from OLS Regression of DIS on Individual IOS, Ownership, Directorship, Audit and Control Variables^a

Mdl	N	Individual IOS Variables					Ownership Variables			Directorship Variable	Audit Variable	Control Variables			Mdlprob ^b	R ²
		MKTBKA +	MKTBE +	P/E +	ADV +	CAPEX +	INSD1 -	INSD2 +	INSD3 -	OUTDIR DUM -	AUDQUAL -	NEW OFF +	lnSIZE +	Incpt +/-		
1	79	3.430 (2.739) ^d					83.879 (0.782)	-33.259 (-1.481) ^f	12.529 (1.270)	0.566 (0.231)	1.440 (0.396)	-4.446 (-1.207)	9.260 (6.350) ^e	-67.033 (-4.897)	0.000	47.12
2	79		2.533 (3.039) ^d				97.280 (0.921)	-35.196 (-1.589) ^f	11.672 (1.202)	0.740 (0.306)	1.551 (0.432)	-3.887 (-1.090)	8.477 (6.025) ^e	-60.268 (-4.605)	0.000	48.27
3	78			-0.158 (-0.940)			113.625 (1.026)	-36.324 (-1.555) ^f	7.723 (0.763)	0.928 (0.369)	2.243 (0.594)	-4.018 (-1.060)	9.362 (9.067) ^e	-63.111 (-4.624)	0.000	45.86
4	80				34.941 (1.885) ^e		48.012 (0.451)	-20.696 (-0.903)	6.432 (0.670)	1.047 (0.431)	0.279 (0.076)	-4.220 (-1.197)	9.929 (6.519) ^e	-67.017 (-4.976)	0.000	47.41
5	80					28.769 (1.100)	66.284 (0.614)	-27.759 (-1.216)	7.273 (0.747)	0.284 (0.113)	0.897 (0.243)	-3.239 (-0.920)	8.716 (6.093) ^e	-59.306 (-4.534)	0.000	45.70

^a Dependent variable is the number of forward-looking information items actually disclosed by the firm. See Table 5.17 for variable definitions. Sample sizes are after omitting one outlier from Models 1 and 2 and two outliers from Model 3.

^b Model probability is based on a *F*-statistic.

^c Significant at 0.001 level based on one-tailed test.

^d Significant at 0.01 level based on one-tailed test.

As before, I use a piecewise linear specification for the inside ownership variable to test H_{4A} . In all five models, the optimal ranges of inside ownerships denoted by INSD1 and INSD3 are not significant. In contrast, although the suboptimal range of inside ownership denoted by INSD2 is significant at the 0.10 level in models 1 to 3, it is incorrectly signed. Therefore, firms with a suboptimal level of managerial ownership could mitigate agency problems by means other than disclosures, for example, by independent outside directors (Hermalin & Weisbach, 1988).

The OUTDIRDUM variable is not significant in all five models, indicating that the presence of independent outside directors has no effect on the voluntary disclosure of prospective information. This finding is consistent with a recent disclosure study by Adams and Hossain (forthcoming) who find no support for a substitutive relationship between overall voluntary disclosure and the percentage of outside directors in the NZ life insurance industry.²⁷

The predicted relationship between DIS and AUDQUAL is also not supported by the OLS results. Moreover, the positive sign seems to suggest that audit quality complements rather than substitutes for disclosures, possibly because voluntary disclosure helps auditors to monitor managerial activities, and enhance their reputational capital. Of the control variables, as expected, *lnSIZE* is statistically related to DIS at the 0.001 level with a positive coefficient in all five models. This indicates that larger firms reveal more discretionary future-oriented information and is similar to findings of studies examining overall discretionary disclosures (e.g., Welker, 1995; Lang & Lundholm, 1993).

²⁷ Contrary to their prediction, Adams and Hossain (forthcoming) find significant positive relationship between disclosure level and fraction of outside directors. There are two obvious reasons for their contradictory finding. First, Adams and Hossain do not differentiate between affiliated and independent outside directors. Second, they do not use the fraction of outside directors as a nonlinear variable.

However, contrary to expectation, the securities offerings variable denoted by NEWOFF is neither statistically significant nor correctly signed in all five models. The negative sign means that those firms that plan to issue securities in the immediate future are less likely to disclose prospective information. One possible reason is that firms that contemplate issuing securities in the near future disclose their private information about future prospects through other venues such as prospectuses (Mak, 1996) and press releases (Frankle et al., 1995).

Table 7.5 provides OLS results using IOSFAC.²⁸ The results indicate that the coefficient on IOSFAC is significant at 0.10 level or better, which again supports results reported in Table 7.4. As before, the optimal range of ownership and directorship variables, i.e., INSD 1 and INSD 2 and OUTDIRDUM, are not statistically significant. However, the INSD 3 is significant at 0.10 level or better in a direction opposite from that predicted. Similar to findings presented in Table 7.4, the coefficient of the AUDQUAL variable is not significant in any of the models. The control variables *ln*SIZE and NEWOFF are statistically significant at 0.001 and 0.10 levels respectively, but the coefficient for NEWOFF does not have the predicted sign. In summary, the results revealed by empirical tests are supportive of H₄, which predicts a positive relation between disclosure and IOS.

²⁸ Estimated by using factor analysis on MKTBKA, MKTBE, and P/E. See Table 4.6 in chapter 4 for summary statistics related to factor analysis. As in previous chapters, regression was run using an alternative proxy IOSDUM. The conclusions are unchanged.

TABLE 7.5

OLS and Logit Estimations for Effects of Composite IOS, Ownership, Directorship, Auditing, and Control Variables on DIS^a

Variable	Predicted sign	Model 6 (DIS)	
		Coefficient	t-value
<i>Composite IOS variables*</i>			
IOSFAC	+	3.499	3.102 ^d
<i>Ownership variables</i>			
INSD1	-	112.807	1.028
INSD2	+	-38.675	-1.686 ^c
INSD3	-	12.807	1.279
<i>Directorship variable</i>			
OUTDIRDUM	-	0.578	0.236
<i>Audit variable</i>			
AUDQUAL	-	1.842	0.505
<i>Control variables</i>			
NEWOFF	+	-4.936	-1.340 ^f
lnSIZE	+	9.030	6.290 ^c
Intercept	+/-	-61.124	-4.602
R ²			48.85%
<i>Pseudo R²**</i>			-
Model probability ^b			0.000
Observations			77

^a See Table 7.2 for variable definitions. Sample size of 77 firms after omitting three outliers.

^b Model probability is based on a *F*-statistic.

^c Significant at 0.001 level based on one-tailed test.

^d Significant at 0.01 level based on one-tailed test.

^e Significant at 0.05 level based on one-tailed test.

^f Significant at 0.10 level based on one-tailed test.

* Estimated using factor analysis. See Table 4.6 in chapter 4 for summary statistics related to the factor analysis.

** The *pseudo-R²* is computed as $[c/(n+c)]$, where *c* is the *chi*²-statistic for the overall model and *n* is total sample size (Aldrich & Nelson, 1984).

7.3 CHAPTER SUMMARY

H4: (Supported) Ceteris paribus, voluntary disclosure of prospective information will be positively (negatively) related to high (low) IOS.

H4_A: (Not supported) Ceteris paribus, voluntary disclosure of prospective information will be negatively related to inside ownership.

H4_B: (Not supported) Ceteris paribus, voluntary disclosure of prospective information will be negatively related to the fraction of outside directors.

H4_C: (Not supported) Ceteris paribus, voluntary disclosure of prospective information will be negatively (positively) related to high (low) quality auditors.

Of the control variables, only *lnSIZE* was signed as predicted and statistically related to disclosure. *NEWOFF* was also significant but not in the direction expected.

CHAPTER EIGHT

TIME-SERIES RELATIONSHIPS BETWEEN CHANGES IN THE MIX OF INSIDE OWNERSHIP, OUTSIDE DIRECTORS, AUDITING, AND DISCLOSURES AND CHANGES IN IOS

8.0 INTRODUCTION

The theory developed in chapter 3 and the empirical results presented in chapters 4 to 7 select a particular point in time to observe the relationship between inside ownership, board composition, auditing, and disclosures and IOS, where IOS is used as an exogenous variable. One problem with these cross-sectional tests is that they do not examine explicitly whether the monitoring policies presently employed by a firm are due to the firm's current IOS or due to the changes in the firm's historical (past) IOS. Furthermore, the cross-sectional tests performed in previous chapters do not examine substitution effects (trade-offs) between monitoring mechanisms.²⁹ The substitution framework postulates that a combination of governance mechanisms help in aligning manager-shareholders interests and that alternative mechanisms serve as substitutes in achieving this alignment depending on the benefits and costs (efficiency) accrued through them. For example, the mix of inside ownership and outside directors will be used only until the marginal benefits and marginal costs to the firm equate (Morck et al., 1988; Byrd & Hickman, 1992).

Agrawal and Knoeber (1996), Anderson et al. (1993) and Moyer, Chatfield, and Sisneros (1989) add that because firm performance increases with the efficiency of a combination of monitoring mechanisms rather than any single mechanism, managers are more likely to choose a

²⁹ The cross-sectional tests consider the substitution effects within a monitoring mechanism. See H3_B, H4_B and H4_C in chapters 3, 6 and 7 in this thesis.

combination or mix of internal mechanisms including inside ownership, directors, auditing and disclosures to minimise agency costs and maximise firm value. Thus, these cross-sectional tests do not provide a complete picture of the relations between inside ownership, board composition, auditing, and disclosures and IOS.

In this chapter I develop hypotheses to test empirically whether changes in the pairwise mix of inside ownership, outside directors, auditing, and disclosures are related to the changes in IOS.³⁰ The remainder of this chapter is organised as follows: section 8.1 develops the testable propositions; sections 8.2 to 8.7 describe the samples, variable measurement, and present and discuss the results with regard to the hypotheses developed in the chapter; section 8.8 summarises and concludes the chapter.

8.1 HYPOTHESES DEVELOPMENT

In this section I put forward six hypotheses derived from IOS literature regarding the relationship between changes in the mix monitoring mechanisms and changes in IOS variables.

8.1.1 OUTSIDE DIRECTORS AND AUDITING

Anderson et al. (1993) show that the firm's IOS not only influences the individual mechanisms (e.g., auditing, directorships) but also the mix of monitoring mechanisms. They contend that the manner in which corporate assets are financed will depend on attributes such as their durability

³⁰ As with earlier research (e.g., Anderson et al. 1993), changes in the pairwise mixes are explored to examine substitution effects between monitoring mechanisms. Moreover, because the substitution hypothesis is not adequately developed (see, for example, Rediker & Seth, 1995) and because simultaneous (interdependent) relationships among inside ownership, outside directors, auditing, and disclosures are difficult to predict on an *ex ante* basis, three-way or four-way mixes of mechanisms are not considered in this thesis.

and their ability to be traded in the secondary market. Because assets-in-place offer collateral for creditors, firms with more assets-in-place are expected to have high leverage. However, too high a level of leverage could induce a risk shifting incentive problem between debtholders and managers-shareholders (Barclay, Smith & Watts, 1995). Consequently, the debtholders may restrict the firm's investment and financing activities through covenants. Because the terms written into debt contracts rely on audited amounts and because managers manipulate accounting numbers in response to covenant constraints (Sweeney, 1994), when compared with the use of outside directors, auditing can be a particularly efficient form of monitoring in low growth firms.

In contrast, when a firm's value is comprised of growth options, the demand for audited accounting numbers will be reduced, as shareholders in these firms are likely to be more concerned with management's optimal exercise of the growth options (Anderson et al., 1993; Smith & Watts, 1992). Because outside directors have incentives to monitor managerial activities closely (noted in chapter 3), they represent a more efficient form of monitoring in high growth firms. Therefore, I hypothesise:

H5: Ceteris paribus, firms tend to increase (decrease) the use of outside directors relative to the use of auditing as IOS increases (decreases).

8.1.2 OUTSIDE DIRECTORS AND DISCLOSURE

Williamson (1985) contends that outside directors are likely to be cost efficient monitors of the interests of claimants in the firm because they help to reduce the costs related to the uncertainty of complex transactions. In an IOS setting, this argument suggests that because high growth firms have higher uncertainty about the value of their assets than low growth firms, outside board members are likely to be more efficient than disclosure in reducing agency costs arising from uncertainty. Furthermore, as indicated in chapter 3, the use of outside directors could

substitute for other costly agency control mechanism such as disclosures (Malone et al., 1993). For instance, outside directors could use their position and influence on the board to demand private information to monitor and control the activities of managers. Such monitoring function performed by outside directors substitutes for monitoring (disclosure) expenditures incurred by managers of the firm in order to alleviate contracting incentive conflicts in the firm.

Conversely, when firm value is comprised of assets-in-place, agency costs will primarily be those between shareholder-managers and debtholders. Since agency costs of debt are borne by owner-managers, they will have incentives to provide financial information voluntarily to reduce such costs (Jensen & Meckling, 1976). Accordingly, I hypothesise:

H6: Ceteris paribus, firms tend to increase (decrease) the use of outside directors relative to the use of disclosure as IOS increases (decreases).

8.1.3 INSIDE OWNERSHIP AND DISCLOSURE

Demsetz (1983) argues that closely held companies may realise gains in contracting from better management control. Fama and Jensen (1983b) add that firms which engage in risky business activities are likely to gain from exercising ownership control. From an IOS perspective, these arguments suggest that firms which increase the level of risk by investing in intangibles (e.g., R & D projects) will need to introduce monitoring mechanisms such as stock ownership to motivate managers to make decisions consistent with the interest of shareholders and enhance firm performance (Francis & Smith, 1995). Because high growth firms tend to transact in risky environments, managerial ownership is likely to be an efficient mechanism in controlling the agency problem (Holthausen, Larker & Sloan, 1995). Therefore, from the above analysis, I hypothesise:

H7: Ceteris paribus, firms tend to increase (decrease) the use of ownership concentration relative to the use of disclosure as IOS increases (decreases).

8.1.4 DISCLOSURE AND AUDITING

Jensen (1986), Smith and Watts (1992), and Kallapur (1994) contend that as companies with more assets-in-place create few opportunities for growth they are likely to accumulate free (excess) cash compared with entities with more growth opportunities. Furthermore, in low growth firms managers might be motivated to expend free cash on investment projects that have negative net present value. In such circumstances, auditors can influence decisions affecting the direction and the use of corporate cash flows by advising ex ante on investment projects and through monitoring ex post by ensuring that the use of free cash flows complies with contract covenants (Hossain & Adams, 1996; Gibbs, 1993).

In contrast, according to Smith and Watts (1992), where corporate value is largely made up of growth opportunities, the agency costs associated with the management and use of free cash flow will be less severe as high growth firms create less free cash. Therefore the monitoring role of auditors will be less critical. In these firms, contracting costs will predominantly be those related to information asymmetries between managers and shareholders. Moreover, managers in firms with high growth options are likely to be given more discretion by the owners over future investment in order to maximise firm value. As a consequence, management in high IOS firms will voluntarily disclose private information about their firms' future prospects to reduce agency costs related to adverse selection and moral hazard problems (Ruland et al., 1990). Therefore, I hypothesise:

H8: Ceteris paribus, firms tend to increase (decrease) the use of disclosure relative to the use of auditing as IOS increases (decreases).

8.1.5 *INSIDE OWNERSHIP AND OUTSIDE DIRECTORS AND INSIDE OWNERSHIP AND AUDITING*

To reiterate, agency theory literature suggests that managers' interests can be aligned with those of outside shareholders by inducing managers equity ownership (Jensen & Meckling, 1976). Numerous studies (e.g., Bathala et al., 1995) point out that a high level of managerial ownership could substitute for internal mechanisms such as outside directors and auditors. Additionally, Lange and Sharpe (1995) postulate that owners of low growth firms are expected to seek to control managerial discretion in decision-making by writing contractual covenants (e.g., accounting based compensation), by employing monitors such as outside directors and auditors to control managers' aberrant behaviour.

In contrast, the more concentrated shareholdings of high growth firms mean that shareholders are better able to control managers' opportunistic behaviour and encourage the introduction of share options which gives managers incentives to maximise firm value. These features thus reduce the need for high growth firms to go to the expense of employing outside directors and auditors to monitor managers' performance compared with low growth firms. Consequently, I propose the following hypotheses:

H9: Ceteris paribus, firms tend to increase (decrease) the use of ownership concentration relative to the use of outside directors as IOS increases (decreases).

H10: Ceteris paribus, firms tend to increase (decrease) the use of ownership concentration relative to the use of auditing as IOS increase (decrease).

8.1.6 *SHORT-TERM VS LONG-TERM CHANGES*

The foregoing section discussed the relationship between changes in the monitoring mix and changes in IOS by hypothesizing the effect of each year's change in IOS on the same year's

change in the mix of monitoring mechanisms. This approach ignores the possibility of the relationship between changes in IOS and changes in corporate monitoring policies being long term. In particular, change in corporate governance mechanisms in a specific year could be driven by random events and therefore may not reflect the firm's long-run policies to resolve conflicts among various stakeholders over the use of corporate resources. Likewise, change in IOS in a particular year might be affected by the state of the national economy and may not reflect the firm's normal growth. For instance, increases in macroeconomic indicators such as GDP and the money supply can send signals to the business community. These in turn stimulate business confidence and result in profitable investment opportunities for corporate entities.

Moreover, firms are unlikely to change their monitoring policies immediately after a change in IOS, as changing the monitoring mechanisms may be costly.³¹ Instead they are likely to adjust control mechanisms to changes in IOS over time to take advantage of long-term benefits. Therefore, I investigate long-term changes to provide a powerful test of the relations between change in IOS and changes in the mix of governance mechanisms.

³¹ For instance, changing auditors is costly because the firm will need to redesign its accounting systems or adjust its expenditures on internal audit. Additionally, the firm will need to bear the transaction costs related to switching and training a new auditor (Watts & Zimmerman, 1986). Similarly, switching back and forth between disclosure policies or accounting procedures to *ex post* transfer wealth from potential investors to existing residual claimants could affect the firm's reputation in the stock market, resulting in increased future financing costs (Sweeney, 1994).

8.2 TEST OF H_5 - TIME-SERIES ASSOCIATION BETWEEN CHANGES IN THE MIX OF OUTSIDE DIRECTORS AND AUDITING AND CHANGES IN IOS

8.2.1 *SAMPLE*

Because of the data limitations of the 80 firms which were used in cross-sectional tests, I use 53 firms for the years 1991-1995 to determine the effect of changes in IOS variables and on the changes in the mix of policy variables. Additionally, to provide a direct and powerful test, I identify those firms that had suboptimal levels on both outside directors (outside the 40-60 percent range) and auditing (audited by a non Big Six auditor) in 1991. The reason is that if firms already employ an optimal level of one or both of the monitoring mechanisms their incentive to make changes is reduced.³²

8.2.2 *VARIABLE MEASUREMENT*

In this section, I provide a description of the measurement of dependent and independent variables employed to test the relationship between changes in IOS variables and changes in monitoring mechanisms. Changes in the mix of governance mechanisms in year t are computed for each firm i over a five-year period 1991-1995. For instance, changes in the mix of

³² In this study optimality is defined as the threshold levels of inside ownership (0 to 5 percent and greater than or equal to 25 percent), outside directors (within 40 to 60 percent range), auditing (Big Six auditor), and disclosures (above the median number 10) based on previous research. This does not necessarily suggest that they (threshold levels) are optimal from an economic standpoint.

Tests were carried out using subsample of firms that had optimal levels of monitoring. I found no significant relationships between changes in the pairwise mixes of mechanisms and changes in IOS, implied that the predicted relationships between changes in the pairwise mixes of mechanisms and changes in IOS are likely to be significant in subsamples of firms that had suboptimal levels of governance mechanisms. Moreover, because firms within the threshold levels are likely to be different from other firms, empirically it is difficult to predict the actual relationships between changes in the pairwise mixes of mechanisms and changes in IOS. Consequently, hypotheses were not tested on all sample firms.

independent directors and auditing in year t are computed by the ratio of the increase (decrease) in independent directors from t to $t-4$ divided by the fraction of independent directors for the year $t-4$ to increase (decrease) in external audit costs from t to $t-4$ divided by the level of external audit costs for the year $t-4$ where $t-4$ represents the year 1991 and t represents the year 1995. There are several problems with the use of this measure. First, it computes changes between two points in time rather than year-by-year changes and, therefore, may be distorting the actual changes across the years. Second, it does not control for factors that could affect the changes in the mix of mechanisms, e.g., changes in CEO, regulation or capital structure.

Rather than the use of a continuous measure (which takes the ratio of percentage change in outside directors to percentage change in auditing), I use a dichotomous measure. The reason is that a continuous measure does not describe the changes in the mix of mechanisms as accurately as the dichotomous measure. For example, when there is a positive change in outside directors and a negative change in auditing, the continuous measure produces a negative OUTAUD ratio, and as a result muddles the actual changes in the mix of outside directors and auditing and weakens the power of the estimates.

I label the dichotomous measure as OUTAUDDUM. It is coded 1 when: (i) changes in both directorships and auditing are positive and greater than or equal to 1; (ii) changes in both directorships and auditing are negative and less than or equal to 1; (iii) change in directorships is positive but change in auditing is negative, 0 otherwise. To illustrate this point let us assume, between 1991 to 1995: (i) OUT increases by 30 percent and AUD increases by 20 percent; (ii) OUT decreases by 20 percent and AUD decreases by 30 percent. To determine the OUTAUD ratios, the percentage increase (decrease) in OUT is divided by percentage increase (decrease) in AUD. The OUTAUD ratios (1.5, 0.66) reveal that OUT increases (decreases) at a higher rate compared with AUD in both cases and consequently coded as 1. Now suppose OUT increases

by 10 percent and AUD decreases by 10 percent. Even though OUTAUD is negative, it is clear that OUT is increasing at a faster rate than AUD. Hence when the change in outside directors is positive and the change in auditing is negative, these cases are also coded 1.

I calculate changes in the IOS variables for year t by dividing the difference in IOS from t to $t-4$ by the level of IOS in $t-4$. Thus I compute the change in MKTBKA between t and $t-4$ by dividing the increase (decrease) in MKTBKA from t to $t-4$ by the percentage of MKTBKA in the year $t-4$. Similar computations are undertaken to measure variations of the remaining IOS variables. In Table 8.1, I provide the definitions and measurements of variables used to examine H_5 .

TABLE 8.1
Definitions of Variables Included in OUTAUDDUM Model

Variable	Predicted sign	Definition and data source
OUTAUDDUM	Dependent variable	An indicator variable coded 1 when: (i) changes in both outside directors and auditing are positive and ≥ 1 ; (ii) changes in both outside directors and auditing are negative and ≤ -1 ; (iii) change in outside directors is positive but change in auditing is negative, 0 otherwise. Mail survey and annual report.
Δ MKTBKA	+	Computed as $(MKTBKA_t - MKTBKA_{t-4}) / MKTBKA_{t-4}$ where t is 1995 and $t-4$ is 1991.
Δ MKTBE		Computed as $(MKTBE_t - MKTBE_{t-4}) / MKTBE_{t-4}$ where t is 1995 and $t-4$ is 1991.
Δ P/E	+	Calculated as $(P/E_t - P/E_{t-4}) / P/E_{t-4}$ where t is 1995 and $t-4$ is 1991.
Δ ADV	+	Measured as $(ADV_t - ADV_{t-4}) / ADV_{t-4}$ where t is 1995 and $t-4$ is 1991.
Δ CAPEX	+	Measured as $(CAPEX_t - CAPEX_{t-4}) / CAPEX_{t-4}$ where t is 1995 and $t-4$ is 1991.

8.2.3 RESULTS

Table 8.2 presents descriptive statistics for changes in the mix of outside directors and auditing and changes in individual IOS variables. The descriptive statistics indicate that the average change in OUTAUDDUM ranged from 0 to 1, with an overall mean of 0.514.

TABLE 8.2

Descriptive Statistics for Changes in Outside Directors and Auditing and Individual IOS Variables

Variable ^a	Mean	Median	Std. dev.	Min.	Max.	N
<i>Dependent variable</i>						
OUTAUDDUM	0.514	1.000	0.507	0.000	1.000	37
<i>IOS variables</i>						
Δ MKTBKA	0.628	0.158	2.061	-0.666	12.087	37
Δ MKTBE	0.662	0.007	2.415	-0.865	11.817	37
Δ P/E	-0.179	-0.200	0.830	-3.387	1.255	37
Δ ADV	0.325	-0.098	1.372	-0.918	5.360	37
Δ CAPEX	0.952	-0.133	4.376	-0.977	24.936	37

^a Variable definitions:

OUTAUDDUM = indicator variable taking the value of one when: (i) changes in both outside directors and auditing are positive and ≥ 1 ; (ii) changes in both outside directors and auditing are negative and ≤ -1 ; (iii) change in outside directors is positive but change in auditing is negative, zero in other cases.

Δ MKTBKA = percentage change in MKTBKA from 1991 to 1995, where percentage change is defined as $(\text{MKTBKA}_{1995} - \text{MKTBKA}_{1991}) / \text{MKTBKA}_{1991}$.

Δ MKTBE = percentage change in MKTBE from 1991 to 1995, where percentage change is defined as $(\text{MKTBE}_{1995} - \text{MKTBE}_{1991}) / \text{MKTBE}_{1991}$.

Δ P/E = percentage change in P/E from 1991 to 1995, where percentage change is defined as $(\text{P/E}_{1995} - \text{P/E}_{1991}) / \text{P/E}_{1991}$.

Δ ADV = percentage change in ADV from 1991 to 1995, where percentage change is defined as $(\text{ADV}_{1995} - \text{ADV}_{1991}) / \text{ADV}_{1991}$.

Δ CAPEX = percentage change in CAPEX from 1991 to 1995, where percentage change is defined as $(\text{CAPEX}_{1995} - \text{CAPEX}_{1991}) / \text{CAPEX}_{1991}$.

As in chapters 4 to 7, I carry out factor analysis on changes in MKTBKA, MKTBE, and P/E to determine a composite measure of IOS. I exclude changes in ADV and CAPEX because they reduced the eigenvalue of the common factor (Factor 1). Table 8.3 presents results using aggregate IOS measures. Model 1 which uses a continuous measure of IOS, the coefficient for IOSFAC, is significant at 0.10 level but not correctly signed, contrary to the evidence provided in an earlier study by Anderson et al. (1993).³³

TABLE 8.3

Logit Estimations of Composite Δ IOS Variables on OUTAUDDUM^a

Variable	Predicted sign	Model 1		Model 2	
		Coefficient	Wald-statistics	Coefficient	Wald-statistics
<i>Composite ΔIOS variables*</i>					
IOSFAC	+	-0.985	1.723 ^d	-	-
IOSDUM	+	-	-	-0.981	1.489
Intercept	+/-	-0.182	0.084	-0.223	0.111
<i>Pseudo-R^{2b}</i>			8.080		4.060
Model probability ^c			0.071		0.211
N			37		37

^a See Table 8.2 for variable definitions.

^b *Pseudo-R²* is computed as $[c/(n+c)]$, where c is the χ^2 -statistic for overall model and n is the sample size (Aldrich & Nelson, 1984).

^c Model probability is based on a χ^2 -statistic.

^d Significant at 0.10 level based on one-tailed test.

^{*} Obtained from factor analysis on Δ MKTBKA, Δ MKTBE, and Δ P/E. To economise on space the results are not reported.

³³ Because logit requires a large sample regressions were reestimated using an OLS model. Additionally, a sensitivity analysis was carried out to examine whether changes in the pairwise mix between outside directors and auditing are related to changes in CEOs. The results remained unchanged, and thus are not reported in this thesis

The negative signs indicate that auditing, rather than outside directors, is likely to be a more efficient form of monitoring as IOS increases. Two possible explanations are that high-growth firms may use equity-based compensation plans to evaluate managerial performance and for that reason might increase auditing to monitor incentive contracts, or high-growth firms are more likely to increase auditing to signal future growth potentials and reduce information asymmetry between managers and outside shareholders (Clarkson & Simunic, 1994; Feltham et al., 1991).

As before, I use a dichotomous measure IOSDUM to test H_5 . IOSDUM is an indicator variable coded 1 for the top 25 percent of all raw scores on IOSFAC, 0 elsewhere. The results using this alternative measure indicate that the coefficient on IOSDUM is not significant but has a sign opposite to that predicted. Overall, the results do not lend support for H_5 .

8.2.4 SUMMARY OF THE TEST OF H_5

In this section I empirically examined the association between change in the mix of directorship and auditing and change in IOS. I tested H_5 using a sample of 37 firms that had suboptimal levels of both outside directors and auditing in 1991. The logit models showed that OUTAUDDUM was not related to changes in IOSDUM. However, contrary to what was expected, changes in IOSFAC were significant but incorrectly signed. Overall, the empirical results provided no support for H_5 .

8.3 TEST OF H_0 - TIME-SERIES ASSOCIATION BETWEEN CHANGES IN THE MIX OF OUTSIDE DIRECTORS AND DISCLOSURES AND CHANGES IN IOS

8.3.1 SAMPLE

As in section 8.2, I identify those firms that in 1991 had suboptimal levels of directors (outside the 40-60 percent range of independent outside directors) and also disclosed less than the median number of forward-looking information item, i.e., 10). This focuses on firms that had flexibility to change the amount of directors and disclosure and provides a powerful test of the hypothesis.

8.3.2 VARIABLE MEASUREMENT

As in section 8.2, I compute the mix between independent directorship and disclosures using a dichotomous measure called OUTDISDUM. OUTDISDUM takes the value of 1 if: (i) changes in both fraction of outside directors and number of disclosures (forward-looking information) are positive and greater than or equal to 1; (ii) changes in both fraction of outside directors and number of disclosures are negative and less than or equal to 1; (iii) change in the fraction of outside directors is positive but change in disclosure is negative, 0 otherwise. As before changes in the IOS variables for year t are calculated by dividing difference in IOS from t to $t-4$ by the level of IOS in $t-4$.

8.3.3 RESULTS

Table 8.4 provides descriptive statistics on OUTDISDUM and five IOS measures. The descriptive statistics indicated three missing values for OUTDISDUM and one missing value for

Δ CAPEX in sample. Therefore, I delete these observations from statistical tests reducing the sample from 37 to 34 firms. Table 8.4 is based on the remaining 34 firms.

TABLE 8.4

Descriptive Statistics for Changes in the Fraction of Outside Directors and Disclosures and Individual IOS Variables

Variable ^a	Mean	Median	Std. dev.	Min.	Max.	N ^b
<i>Dependent variables</i>						
OUTDISDUM	0.382	0.000	0.493	0.000	1.000	34
<i>IOS variables**</i>						
Δ MKTBKA	0.675	0.126	2.146	-0.666	12.087	34
Δ MKTBE	0.737	0.077	2.507	-0.865	11.817	34
Δ P/E	-0.197	-0.207	0.836	-3.387	1.255	34
Δ ADV	0.327	-0.101	1.428	-0.918	5.36	34
Δ CAPEX	1.027	-0.134	4.559	-0.977	24.936	34

^a Variable definitions:

OUTDISDUM = indicator variable taking the value of one when: (i) changes in both outside directors and disclosures are positive and ≥ 1 ; (ii) changes in both outside directors and disclosures are negative and ≤ -1 ; (iii) change in outside directors is positive but change in disclosures is negative, zero in other cases.

^b The sample of 34 firm is after omitting three missing values.

** See Table 8.2 for definitions of Δ IOS variables.

To test H_6 , I use factor analysis on four (Δ MKTBE, Δ P/E, Δ ADV, and Δ CAPEX) of the five individual IOS variables to obtain an aggregate measure of changes in IOS variables. Change in MKTBKA is not included because it reduced the percentage of variance explained by the common factor to less than fifty percent (Hair *et al.* 1990). Table 8.5 provides outcomes of the effects of Δ IOSFAC and Δ IOSDUM on OUTDISDUM. None of the models have significant explanatory power, and the composite IOS measures are not significant at conventional levels. In summary, the empirical evidence reported in Table 8.5 is not supportive of H_6 which predicts

an increase (decrease) in the proportion of outside directors relative to disclosures in the presence increasing (decreasing) IOS.

TABLE 8.5
Logit Estimations of Composite Δ IOS Variables on OUTDISDUM^a

Variable	Predicted value	Model 1		Model 2	
		Coefficients	Wald-statistics	Coefficients	Wald-statistics
<i>Composite ΔIOS variables^a</i>					
IOSFAC	+	0.037	0.011	-	-
IOSDUM	+	-	-	0.636	0.604
Intercept	+/-	-0.48	1.847	-0.636	2.380
<i>Pseudo-R^{2b}</i>			0.032		1.740
Model probability ^c			0.918		0.438
N			34		34

^a See Table 8.4 for variable definitions. The sample size of 34 firms is after omitting three missing values.

^b *Pseudo-R²* is computed as $[c/(n+c)]$, where c is the *chi*²-statistic for overall model and n is the sample size (Aldrich & Nelson, 1984).

^c Model probability is based on a *chi*²-statistic.

* Obtained from factor analysis on Δ MKTBE, Δ P/E, Δ ADV, and Δ CAPEX. To economise on space the results are not reported.

8.3.4 SUMMARY OF THE TEST OF H_6

In this section, I examined empirically the association between the change in the mix of outside directors and disclosures and change in IOS from 1991-95. I test H_6 using a sample of 34 firms. The empirical results revealed that Δ IOSFAC and Δ IOSDUM were not statistically related to OUTDISDUM.

8.4 TEST OF H_7 - TIME-SERIES ASSOCIATION BETWEEN CHANGES IN THE MIX OF INSIDE OWNERSHIP AND DISCLOSURES AND CHANGES IN IOS

8.4.1 SAMPLE

The sample comprises firms with suboptimal levels of inside shareownership (5-25 percent of INSD) and disclosures (below the median number 10 of DIS) in 1991. Of the total 53 firms used in longitudinal tests, 14 firms met these criteria and are employed to test H_7 .

8.4.2 VARIABLE MEASUREMENT

I measure the changes in the mix between inside ownership and disclosures using an indicator variable coded 1 if: (i) changes in both inside ownership and disclosures are positive and greater than or equal to 1; (ii) changes in both inside ownership and disclosures are negative and less than or equal to 1; (iii) change in inside ownership is positive but change in disclosure is negative, and 0 otherwise (see section 8.2). I call this INSDISDUM. I define the changes in IOS variables as in section 8.2.

8.4.3 RESULTS

Table 8.6 provides descriptive statistics for the dependent and independent variables included to examine H_7 . An initial inspection of the descriptive statistics revealed two missing values for the dependent variable (INSDIS) and one for Δ CAPEX. As a consequence, I deleted them from statistical analyses decreasing the sample from 14 to 11.

To test the predicted relationship, I regress INSDISDUM on changes in composite IOS variables. The composite measures are extracted from Δ MKTBKA, Δ P/E, Δ ADV, and Δ CAPEX using

factor analysis.³⁴ Table 8.7 presents results using the composite IOS measures. Contrary to what is hypothesised, INSDISDUM is not statistically related to any of the composite IOS measures and the overall statistical significance and *pseudo-R*²s of models 1 and 2 are relatively low. The lack of statistical significance indicates that companies change the mix of inside ownership and disclosures due to changes in factors other than IOS (e.g., change in company legislation).

TABLE 8.6

Descriptive Statistics for Changes in Inside Ownership and Disclosure and Individual IOS variables

Variable ^a	Mean	Median	Std. dev.	Min.	Max.	N ^b
<i>Dependent variable</i>						
INS DISDUM	0.364	0.000	0.505	0.000	1.000	11
<i>IOS variables**</i>						
ΔMKTBKA	0.472	0.187	0.967	-0.519	2.483	11
ΔMKTBE	0.314	0.134	0.909	-0.444	2.850	11
ΔP/E	-0.105	-0.005	0.610	-1.104	0.782	11
ΔADV	0.067	-0.327	1.223	-0.895	3.553	11
ΔCAPEX	1.188	0.040	4.151	-1.000	13.552	11

^a Variable definitions:

INSDISDUM = dummy variable coded one when: (i) changes in both inside ownership and disclosures are positive and ≥ 1 ; (ii) changes in the inside ownership and disclosures are negative and ≤ 1 ; (iii) change in inside ownership is positive but change in disclosures are negative, zero otherwise.

^b The sample of 11 firms is after omitting three missing values.

** See Table 8.2 for definitions of changes in IOS variables.

³⁴ Factor analysis was conducted using changes in MKTBE. However, this reduced the eigenvalue to less than one, and it is not included to determine composite IOS measures.

TABLE 8.7

Logit Estimations of Effects of Composite Δ IOS Variables on INSDISDUM^a

Variable	Predicted sign	Model 1		Model 2	
		Coefficient	Wald-statistics	Coefficient	Wald-statistics
<i>Composite ΔIOS variables*</i>					
IOSFAC	+	0.920	1.143	-	-
IOSDUM	+	-	-	10.456	0.022
Intercept	+/-	-0.585	0.747	-1.253	2.441
<i>Pseudo-R^{2b}</i> %			12.615		30.752
Model probability ^c			0.208		0.027
N			11		11

^a See Table 8.6 for variable definitions. Sample size of 11 firms is after deleting three outliers.

^b *Pseudo-R²* is computed [$c/(n+c)$], where c is the *chi*²-statistic for overall model and n is the total sample size (Aldrich & Nelson, 1984).

^c Model probability is based on a *chi*²-statistic.

* Estimated by using factor analysis on Δ MKTBKA, Δ P/E, Δ ADV, and Δ CAPEX. To economise on space the results related to factor analysis are not reported.

8.4.4 SUMMARY OF THE TEST OF H_7

In this section, I investigated the relationship between the change in the mix of inside ownership and disclosures and change in IOS. I found that none of the composite IOS measures were significantly associated with INSDISDUM, contrary to predictions of H_7 , which predicted an increase (decrease) in INSDISDUM with increase (decrease) in IOS.

8.5 TEST OF H_8 - TIME-SERIES ASSOCIATION BETWEEN CHANGES IN THE MIX DISCLOSURES AND AUDITING AND CHANGES IN IOS

8.5.1 SAMPLE

The 23 firms that have non optimal disclosures (below the median [10] number of future oriented information) and auditing (non-Big Six audit firms) in 1991 are used to test H_8 .

8.5.2 VARIABLE MEASUREMENT

As before, I use an ordinal categorical variable to measure changes in the mix between disclosures and auditing between 1991-1995. I call this DISAUDDUM and code as 1 if: (i) changes in both disclosures and auditing are positive and greater than or equal to 1; (ii) changes in both disclosures and auditing are negative and less than or equal to 1; (iii) the change in disclosures is positive but the change in audit is negative, and 0 otherwise. Similar to previous sections changes in the IOS variables for year t are calculated by dividing difference in IOS from t to $t-4$ by the level of IOS in $t-4$.

8.5.3 RESULTS

Table 8.8 provides descriptive statistics for the dependent and independent variables used to test H_8 . The descriptive statistics show that the change in the mix of disclosures and audit ranges from 0 to 1 with an overall mean of 0.478 percent.

Table 8.9 presents outcomes of effects of aggregate IOS measures on DISAUDDUM. The aggregate measures are determined by using changes MKTBKA, ADV, and CAPEX.³⁵ The

³⁵ Changes in MKTBE and P/E are excluded from factor analysis because they reduced the eigenvalue to less than 1 (Hair et al., 1990).

simple logit results show that Δ IOSFAC and Δ IOSDUM are significant at the 0.05 level in models 1 and 2, suggesting that disclosures increase relative to audit in the presence of more growth options in IOS of the firm. These findings not only support H_3 but also support evidence documented in earlier studies (e.g., Anderson et al., 1993).

TABLE 8.8

Descriptive Statistics for Changes in Disclosure and Auditing and Individual IOS Variables

Variable	Mean	Median	Std. dev.	Min.	Max.	N
<i>Dependent variable^a</i>						
DISAUD DUM	0.478	0.000	0.511	0.000	1.000	23
<i>IOS variables^b</i>						
Δ MKTBKA	0.394	0.158	0.949	-0.666	2.554	23
Δ MKTBE	0.249	0.019	0.805	-0.865	2.850	23
Δ P/E	-0.199	-0.188	0.933	-3.387	1.255	23
Δ ADV	0.560	0.008	1.730	-0.895	5.360	23
Δ CAPEX	1.985	0.123	5.831	0.123	24.936	23

^a Variable definitions:

DISAUDDUM = dummy variable coded one when: (i) changes in both disclosures and audit costs are positive and ≥ 1 ; (ii) changes in both inside disclosures and audit costs are negative and ≤ -1 ; (iii) change in disclosures is positive but change in audit fees are negative, zero otherwise.

^b See Table 8.2 for definitions of IOS variables.

TABLE 8.9

Logit Estimations for Effects of Composite Δ IOS Variables on DISAUDDUM^a

Variables	Predicted sign	Model 1		Model 2	
		Coefficient	Wald-statistics	Coefficient	Wald-statistics
<i>Composite ΔIOS variables^b</i>					
IOSFAC	+	0.921	2.945 ^d	-	-
IOSDUM	+	-	-	1.674	3.626 ^d
Intercept	+/-	-0.087	0.037	-0.981	2.099
<i>Pseudo-R^{2b} (%)</i>			13.825		13.773
Model probability ^c			0.055		0.055
N			23		23

^a See Table 8.8 for variable definitions.

^b *Pseudo-R²* is computed $[c/(n+c)]$, where c is the *chi*²-statistic for overall model and n is the total sample size (Aldrich & Nelson, 1984).

^c Model probability is based on a *chi*²-statistic.

^d Significant at 0.05 level based on one-tailed test.

^{*} Computed using factor analysis on Δ MKTBKA, Δ ADV, and Δ CAPEX. To economise on space the results are not reported.

8.5.4 SUMMARY OF THE TEST OF H_8

This section provided empirical evidence of the relation between changes in the mix of disclosures and auditing and changes in IOS variables. The empirical results suggested that changes in aggregate IOS variables were statistically related to changes in the mix of disclosures and auditing. On the whole, these results are supportive of H_8 .

8.6 TEST OF H₉ - TIME-SERIES ASSOCIATION BETWEEN CHANGES IN THE MIX OF INSIDE OWNERSHIP AND OUTSIDE DIRECTOR AND CHANGES IN IOS

8.6.1 SAMPLE

I use a sample of 14 firms to investigate H₉. These are firms that have suboptimal levels of inside ownership and independent outside directors in 1991.

8.6.2 VARIABLE MEASUREMENT

The dependent variable (mix of inside ownership and independent directorship) is proxied by a dichotomous measure. I call this *INSOUTDUM*. *INSOUTDUM* is coded 1 if: (i) changes in both inside ownership and independent directors are positive and greater than or equal to 1; (ii) changes in both inside ownership and independent directors are negative and less than or equal to 1; (iii) change in inside ownership is positive but change in independent directors is negative, and 0 in other cases (see section 8.2). Changes in IOS variables are computed using methods similar to that described earlier in this chapter.

8.6.3 RESULTS

Table 8.10 provides summary statistics of the dependent and IOS variables. The descriptive statistics show that changes in the mix of inside ownership and outside directors range from 0 to 1 and the mean for *INSOUTDUM* is 0.214. Table 8.11 shows results using the aggregate IOS variables.³⁶ Contrary to expectation, the coefficient on *IOSFAC* is not significant at conventional

³⁶ I determined the aggregate measures using factor analysis on Δ MKTBKA, Δ ADV, and Δ CAPEX. I also performed factor analysis using all five IOS variables. However, the eigenvalue was less than one. To economise on space, I do not report the results of factor analysis.

level, indicating that INSOUT is unaffected by changes in IOS. However, the coefficient on IOSDUM is statistically related at the 0.05 level, providing some support for the contention that the percentage of managerial shareownership increases relative to the fraction outside directors because of increasing investment in growth opportunities. In sum, the results partially confirm H_9 , which predicts a positive relationship between INSOUTDUM and ΔIOS .³⁷

TABLE 8.10

Descriptive Statistics for Changes in Inside Ownership and Outside Directors and Individual IOS Variables

Variable	Mean	Median	Std. dev.	Min.	Max	N
<i>Dependent variable^a</i>						
INSOUTDUM	0.214	0.000	0.426	0.000	1.000	14
<i>IOS variables^b</i>						
Δ MKTBKA	0.368	0.101	0.877	-0.519	2.483	14
Δ MKTBE	0.210	0.077	0.841	-0.650	2.850	14
Δ P/E	2.393	-0.097	10.371	-3.387	38.249	14
Δ ADV	0.807	-0.116	2.071	-0.895	5.360	14
Δ CAPEX	1.144	0.135	3.672	-1.000	13.522	14

^a Variable definitions:

INSOUTDUM = dummy variable coded one when: (i) changes in both inside ownership and proportion of outside directors are positive and ≥ 1 ; (ii) changes in both inside ownership and outside directors are negative and ≤ -1 ; (iii) change in inside ownership is positive but change in the fraction of outside directors are negative, zero otherwise.

^b See Table 8.2 for other variable definitions.

³⁷ In an effort to rule out alternative explanations for H_9 , I performed an additional test using a sample of 27 firms that had an optimal level of inside ownership but suboptimal outside directors. I found that $\Delta IOSDUM$ was significantly and negatively related to INSOUTDUM at the 0.05 level.

TABLE 8.11

Logit Estimations for Effects of Composite Δ IOS Variables on INSOUTDUM^a

Variables	Predicted sign	Model 1		Model 2	
		Coefficient	Wald-statistics	Coefficient	Wald-statistics
<i>Composite ΔIOS variables^a</i>					
IOSFAC	+	0.921	0.907	-	-
IOSDUM	+	-	-	2.996	3.452 ^d
Intercept	+/-	-0.087	3.956	-2.303	-4.820
<i>Pseudo-R^{2b} (%)</i>			6.285		22.339
Model probability ^c			0.333		0.045
N			14		14

^a See Table 8.10 for variable definitions.

^b *Pseudo-R²* is computed [$c/(n+c)$], where c is the χ^2 -statistic for overall model and n is the total sample size (Aldrich & Nelson, 1984).

^c Model probability is based on a χ^2 -statistic.

^d Significant at 0.05 level based on one-tailed test.

^e Computed using factor analysis on Δ MKTBKA, Δ ADV, and Δ CAPEX. To economise on space the results are not reported.

8.6.4 SUMMARY OF TEST OF H_0

This subsection empirically examined H_0 . The results revealed that of the two composite IOS measures, only Δ IOSDUM was significantly and positively related to INSOUTDUM. Thus, this section provides limited support for H_0 .

8.7 TEST OF H_{10} - TIME-SERIES ASSOCIATION BETWEEN CHANGES IN THE MIX OF INSIDE OWNERSHIP AND AUDITING AND CHANGES IN IOS

8.7.1 *SAMPLE*

To test H_{10} , I use a sample which consists of 14 firms that have suboptimal levels of inside ownership (5 to 25 percent shown in Morck et al., 1988) and auditing (non-Big Six auditor) in 1991.

8.7.2 *VARIABLE MEASUREMENT*

I measure the proxy for the changes in the mix of inside ownership and auditing using an indicator variable called INSAUDDUM. It is coded 1 if: (i) changes in both inside ownership and auditing are positive and greater than or equal to 1; (ii) changes in both inside ownership and auditing are negative and less than or equal to 1; (iii) change in inside ownership is positive but change in external auditing is negative, 0 in other cases. As before, I measure changes in IOS variables by dividing the increase (decrease) in measures of IOS from t to $t-4$ by levels of IOS measures at $t-4$.

8.7.3 *RESULTS*

A summary of the descriptive statistics for the dependent and IOS variables is shown in Table 8.12. The overall mean for the sample is 0.285.

Table 8.13 presents outcomes of the effects of composite IOS variables on INSAUDDUM.³⁸ The results indicate that regression models are not highly significant, with *pseudo-R*²s varying between 4.949 percent to 9.379 percent, but the coefficient representing Δ IOSDUM is significant at the 0.10 level. In contrast, the coefficient on Δ IOSFAC is not significant, indicating that changes in IOS have no effect on the mix of inside ownership and auditing. Therefore, the results provide limited support for H₁₀.

TABLE 8.12

Descriptive Statistics for Changes in Inside Ownership and Auditing and Individual IOS Variables

Variable	Mean	Median	Std. dev.	Min.	Max.	N
<i>Dependent variable^a</i>						
INSAUDDUM	0.286	0.000	0.469	0.000	1.000	14
<i>IOS variables^b</i>						
Δ MKTBKA	0.368	0.101	0.877	-0.519	2.483	14
Δ MKTBE	0.210	0.077	0.841	-0.650	2.850	14
Δ P/E	-0.283	-0.097	1.069	-3.387	0.782	14
Δ ADV	0.606	-0.116	1.653	-0.895	3.553	14
Δ CAPEX	1.144	0.135	3.672	1.000	13.522	14

^a Variable definitions:

INSAUDDUM = dummy variable coded one when: (i) changes in both inside ownership and audit costs are positive and ≥ 1 ; (ii) changes in both inside ownership and audit costs are negative and ≤ -1 ; (iii) change in inside ownership is positive but change in audit fees are negative, zero otherwise.

^b See Table 8.2 for other variable definitions.

³⁸ Composite measures are derived from factor analysis on all five IOS variables. To economise on space the results related to factor analysis are not reported.

TABLE 8.13

Logit Estimations for Effects of Composite Δ IOS Variables on INSAUDDUM^a

Variables	Predicted sign	Model 1		Model 2	
		Coefficient	Wald-statistics	Coefficient	Wald-statistics
<i>Composite ΔIOS variables[*]</i>					
IOSFAC	+	0.547	0.665	-	-
IOSDUM	+	-	-	1.504	1.321 ^d
Intercept	+/-	-0.971	2.451	-1.791	-2.751
<i>Pseudo-R^{2b} (%)</i>			4.949		9.379
Model probability ^c			0.393		0.229
N			14		14

^a See Table 8.12 for variable definitions.

^b *Pseudo-R²* is computed $[c/(n+c)]$, where c is the χ^2 -statistic for overall model and n is the total sample size (Aldrich & Nelson, 1984).

^c Model probability is based on a χ^2 -statistic.

^d Significant at 0.10 level based on one-tailed test.

^{*} Computed by using factor analysis on all five IOS variables. To economise on space the data related to factor analysis is not reported.

8.7.4 SUMMARY OF THE TEST OF H_{10}

In this subsection I provided evidence on the association between changes in the pairwise mix between inside ownership and auditing and changes in IOS. The tests were carried out using a sample of 14 companies. The results showed that of the two composite IOS variables, only Δ IOSDUM was positively and significantly related to INSAUDDUM. These findings provided limited support for H_{10} .

8.8 CHAPTER SUMMARY

In this chapter I developed hypotheses with regard to the time-series association between changes in the mix of monitoring mechanisms and changes in IOS. I also analysed, presented, and discussed cross-temporal (time series) empirical results obtained from logit regressions. The tests were conducted by examining the changes in the pairwise mix of inside ownership, outside directors, auditing and disclosures, and changes in IOS from 1991 to 1995. The following are the results and conclusions from these analyses:

H5: (Not supported) Ceteris paribus, firms tend to increase (decrease) the use of outside directors relative to the use of auditing as IOS increases (decreases).

H6: (Not supported) Ceteris paribus, firms tend to increase (decrease) the use of outside directors relative to the use of disclosure as IOS increases (decreases).

H7: (Not supported) Ceteris paribus, firms tend to increase (decrease) the use of ownership concentration relative to the use of disclosure as IOS increases (decreases).

H8: (Supported) Ceteris paribus, firms tend to increase (decrease) the use of disclosure relative to the use of auditing as IOS increases (decreases).

H9: (Partially supported) Ceteris paribus, firms tend to increase (decrease) the use of ownership concentration relative to the use of outside directors as IOS increases (decreases).

H10: (Partially supported) Ceteris paribus, firms tend to increase (decrease) the use of ownership concentration relative to the use of auditing as IOS increase (decrease).

CHAPTER NINE

CONCLUDING REMARKS

9.0 INTRODUCTION

The purpose of this chapter is to: 1) summarise the study; 2) present the main findings; 3) discuss implications arising from the study; 4) assess the contributions of the research project; 5) discuss the limitations of the study; and 6) offer suggestions for further research in this area. This final chapter has three more sections. Section 9.1 presents a summary of the content of the study and its main findings. Additionally, it considers implications that arise from the findings obtained in this study and the contribution to the literature made by this study. The limitations of the study and potential areas of further research are examined in sections 9.2 and 9.3 respectively.

9.1 SUMMARY, MAIN CONCLUSIONS, IMPLICATIONS AND CONTRIBUTION TO THE LITERATURE

Recent studies in accounting and finance indicate that accounting and other important corporate policy decisions (e.g., debt, dividend, compensation, and hedging) are related to investment opportunities present in the firm. In this study I attempt to extend this research by examining whether decisions about managerial shareownership, outside directors, high quality audit services, and prospective information disclosures are also related to IOS.

To shed light on this, I review critically previous empirical studies related to IOS, ownership concentration, board composition, auditing, and disclosures for the development of theory and hypotheses. I find that prior research 1) does not test the relationship between these monitoring mechanisms and the IOS of the firm; 2) does not examine the effect of organisational

characteristics on multiple monitoring mechanisms (Smith & Watts, 1992; Gaver & Gaver, 1993 being notable exceptions); and 3) does not examine the relationship between policy variables and the surrogates of agency costs on a time series basis (chapter two). Drawing on Smith and Watts (1992), Gaver and Gaver (1993), Skinner (1993), and Anderson et al. (1993), chapter three of my study develops a number of hypotheses regarding the efficiency of these monitoring mechanisms in the high IOS and Low IOS firms. H_1 to H_4 are put forward to test cross-sectional relations between inside ownership, outside (independent) directors, auditing and voluntary disclosures and IOS.

I use reduced form recursive models to test empirically the cross-sectional relation between policy decisions and IOS. This is because recursive models help to eliminate bias stemming from misspecification of system (simultaneous) equations and provide a more robust test of hypotheses 1 to 4. Additionally, to test time series relationships between the pairwise mix of monitoring mechanisms and the IOS, I use simple logit regressions. I provide details of research design in chapters 4 to 8.

The empirical results obtained from cross-sectional tests are presented and discussed in chapters 4 to 7. The results can be summarised as follows. H_1 predicts a positive relationship between the level of inside (managerial) ownership and IOS. The empirical results suggest that IOS is significant only in the alternative (dichotomous) model. H_2 which predicts the effect of IOS on board composition is also supported. The cross-sectional regressions reveal that IOS is positively related to the structure of board.

The cross-sectional tests also find support for H_3 which expects a positive association between auditing and IOS. The results indicate that measures of IOS are significant in both audit costs and audit quality models. With respect to voluntary disclosure policy, cross-sectional results

indicate that IOS is positively related to the measure of disclosures, consistent with H_4 which predicts a positive relationship between voluntary disclosure of forward-looking information and IOS.

In summary, the cross-sectional tests indicate that IOS is an important determinant in explaining variations in managerial shareownership, independent directorship, auditing, and disclosure policies.

The hypotheses 5 to 9 (time series predictions) are developed in chapter 8. Chapter 8 also examines the time series predictions between the increase (decrease) in the pairwise mix of these monitoring mechanisms and the increase (decrease) in IOS. The changes are computed between the two years, 1991 and 1995. The results suggest that increases (decreases) in the pairwise mix of outside directors and auditing, outside directors and disclosure, and inside ownership and disclosure are not statistically related to increase (decrease) in IOS. In contrast, changes in the pairwise mix of disclosure and auditing, inside ownership and outside directors, and inside ownership and auditing are statistically related to increase (decrease) in IOS. Overall, the empirical results provide limited support for the predictions of the IOS hypothesis. The weak results may be attributed to changes in factors other than the firm's IOS (such as change in CEO or changes in regulation) or to the small sample sizes and weak tests.

Two major conclusions emanate from the empirical results obtained in my study. First, consistent with the observations derived from the previous literature of Smith and Watts (1992), Gaver and Gaver (1993), Mian (1996), and others, I find that IOS is an important consideration in enhancing our understanding of cross-sectional variation in observed inside ownership, independent directorship, auditing, and disclosure policies. Therefore, it appears that the voluntary use of managerial ownership scheme, independent directors, high quality auditors, and

prospective information is motivated by the desire of managers to solve conflicts of interest between the firm and outside contracting parties efficiently. It also helps potential investors to minimise adverse selection and moral hazard problems and enables them to monitor managerial performance, particularly when the firm grows.

The second main conclusion of the study is that changes in the pairwise mix of disclosure and auditing, inside ownership and outside directors, and inside ownership and auditing are significantly related to the change in IOS. These conclusions support the view that high-growth firms have higher agency costs and as such need different monitoring mechanisms to maximise firm value. From a policy standpoint, the findings of this study also suggest that optimal ownership structure, board structure, auditing, and disclosures will not be same for all firms. As a consequence, mandating the use of a managerial shareownership scheme, independent outside directors, high priced audit services, and disclosure of prospective information for all firms (e.g., low-growth firms) may result in less efficient (suboptimal) governance structures from the society's point of view (see, for example, Jensen 1993).

The time series tests also indicate that changes in the pairwise mix of outside directors and auditing are not statistically related to the change in IOS. This finding is contrary to the empirical results reported in earlier studies (e.g., Anderson et al., 1993). One possible explanation for this is that managers changed the mix between these mechanisms due to changes in company legislation rather than because of changes in IOS. Further, the lack of statistical evidence between changes in the pairwise mix of outside directors and disclosure, and inside ownership and disclosure with changes in IOS could also reflect that managers altered the mix of these mechanisms as a result of the change in organisational circumstance such as a change in CEO. Alternatively, the results could be due to the limited sample and the low power of these tests.

My thesis contributes to the existing IOS literature in several ways. First, it provides a comprehensive and powerful test of the relationship between IOS and policy variables. For instance, while previous studies have used an opportunistic perspective to explain variations in ownership concentration, board composition, auditing, and disclosures, my study has linked IOS with these policy variables using an efficient contracting perspective. Furthermore, prior studies have investigated the efficiency of these mechanisms in controlling manager-shareholder conflicts largely in isolation. That is, these studies concentrate either on ownership concentration or board composition, while my study has investigated the effect of IOS on all of these mechanisms. Therefore, it reduces mis-specification bias in the models and enhances the power of the tests. Consequently, the use of multiple mechanisms methodology in this thesis could help others to realise the benefits of this approach over single mechanism research designs and may promote its use in future research.

Second, earlier research (e.g., Anderson et al., 1993) examines the relationship between the mix of monitoring mechanisms and IOS cross-sectionally, while my study contributes to IOS literature using a time-series approach to investigate whether increase (decrease) in the pairwise mix between monitoring mechanisms is associated with the increase (decrease) in IOS. This produces a more robust test of the IOS hypothesis than tests conducted exclusively on a cross-sectional basis.

Third, previous research on IOS has primarily been carried out in the US, where the business sector is highly regulated and the legal risk of corporate governance decisions is likely to be high (Frost, 1997). In contrast, my study examines the effect of IOS on inside ownership, independent directorship, auditing, and disclosure policies in a relatively unregulated market where corporate governance decisions, particularly the voluntary use of managerial shareownership, independent directors, a high priced and/or high quality auditor, and prospective information disclosures are

likely to be influenced by demand-side costs which arise from the divergence of interest between managers and shareholders or debtholders. Thus, the results of my study are unaffected by legal and regulatory requirements and provide a more reliable test of the IOS hypothesis.

Fourth, it is believed that no other study has investigated empirically the relationship between IOS and the voluntary disclosure of prospective information, with Cahan and Hossain (1996) being the notable exception. While the present study is similar to Cahan and Hossain, and focuses on the effect of IOS on voluntary disclosure of prospective information, it also considers a number of alternative monitoring mechanisms not examined by Cahan and Hossain.

9.2 LIMITATIONS OF THE STUDY

The conclusion drawn from this study are constrained by a few caveats. First, the statistical analyses carried out in this thesis suffer from problems associated with omitted variables. Like most prior positive accounting research (e.g., Demsetz & Lehn, 1985; Hermalin & Weisbach, 1988; Chow, 1982; Leftwich et al., 1981; and Wong, 1988), the models tested in this study adopt a derived demand approach (focus exclusively on the demand for inside ownership, independent directorship, auditing, and disclosure) that assumes no cross-sectional differences in supply-side costs. However, analytical and theoretical research (e.g., Feltham et al., 1991; Darrrough & Stoughton, 1990) suggests that governance decisions are also likely to be affected by supply-side cost factors such as managers' personal wealth constraints, information production costs, and proprietary costs. It is possible therefore that the empirical relationships shown in this study could be driven by cross-sectional differences in omitted cost factors that affect corporate governance decisions. Likewise, time series results documented in this study may also be driven by omitted variables such as a change in CEO of the firm or a change in company legislation.

The second caveat emanates from the measurement errors in the operationalisation of the hypotheses. For instance, the primary variable of interest, IOS, is measured by MKTBKA, MKTBE, P/E, ADV and CAPEX. Because these proxies capture different aspects of growth opportunities, they are likely to measure IOS with error. Furthermore, the measurement errors with regard to the proxies of inside ownership, outside directors, auditing, and disclosures could potentially reduce the statistical power of the cross-sectional tests conducted in this thesis.

The third caveat also pertains to measurement errors of variables included in time-series statistical tests. If the proxies of IOS and the mix of mechanisms induce noise (e.g., individual IOS variables also represent factors other than IOS (e.g., competition, monopoly rent)), the error terms in regressions may be correlated with the composite IOS measure. This would reduce the power of the time-series tests. Additionally, the time-series tests may lack power due to the small sample sizes (11-37 firms).

The fourth caveat is that the explanatory variables used in this study are considered exogenous (predetermined), but Clarkson and Simunic (1994), Whittred and Zimmer (1994), Christie (1990), Watts and Zimmerman (1990), and others report that several explanatory variables used in this research may be endogenous. For example, IOS may determine the level of inside ownership, board composition, level of auditing, and disclosures, but at the same time IOS could directly be affected by the level of inside ownership, fraction of outside directors, level of disclosures, level of debt, amount of R & D expenditures, extent of barriers to entry, and availability of internal funds (Holthausen et al., 1995; Bhagat & Welch, 1995). If the endogeneity problem induces bias in econometric (statistical) analyses, then the models used in my study may be inadequate to capture the underlying relationship between IOS and policy variables (Mian, 1996; Copley et al., 1994; Gaver & Gaver, 1993; Smith & Watts, 1992).

Unfortunately, as noted earlier in chapter 4, the extant IOS literature is not adequately developed to explain the endogeneity between IOS and the policy variables.

The fifth caveat is that like most previous studies (e.g., Mak, 1996; Bradbury, 1990), my research also adopts a single mechanism focus in that it investigates the efficiency of inside ownership, independent directors, high priced (quality) auditors, and disclosures, without considering many alternative means by which owners can monitor management. For instance, a firm could use executive compensation schemes such as equity based or stock option plans, audit committees, outside consultants, institutional investors, or a mix of these control mechanisms. If these omitted alternative mechanisms are correlated with the mechanisms investigated, then any empirical findings reported in this thesis could be spurious.

The sixth caveat pertains to measurement error arising from differences in financial year ends across firms. If the sample firms' variations in year-end induce error in the computation of market and book measures of IOS, the estimated coefficients on the cross-sectional and longitudinal tests may be misstated.

Finally, a general caveat of most empirical research is the inability to generalise results beyond the particular sample. Accordingly, the inferences drawn from the empirical evidence in this study may not be generalised to unlisted companies, IPO firms, subsequent time periods, or to a more tightly regulated environment. Additionally, as indicated in chapter 4, the coding discrepancies and arithmetic errors in the data base could affect conclusions drawn from the results of my study.

9.3 SUGGESTIONS FOR FUTURE RESEARCH

There are many issues which can be addressed by future studies. First, inclusion of supply-side costs as determinants of inside ownership, independent directorship, auditing, and disclosures might provide a more robust test and contribute to the development of a more cohesive theory of the choice of these mechanisms. Second, inclusion of a larger and more complete set of control mechanisms (e.g., compensation contract) in a future study could provide additional insight into the corporate governance decisions. Additionally, by investigating changes in the mix of these mechanisms on a year-by-year basis rather than at two points in time, future research could provide more insight into how these mechanisms change over time. In doing so, future studies could shed further light on the relationship between changes in IOS and changes in the mix of policy variables.

Third, future research could benefit by considering the interrelationship among the monitoring mechanisms using a simultaneous equation framework. Moreover, refinement of the measures of the IOS and policy variables is warranted to eliminate alternative explanations for the empirical findings.

REFERENCES

- Adams, M. B., & Hossain, M. (forthcoming). Managerial-discretion and voluntary disclosure: Empirical evidence from the New Zealand life insurance industry. Journal of Accounting and Public Policy.
- Adams, M. B., Sherris, M., & Hossain, M. (1997). The determinants of external audit costs in the New Zealand life insurance industry. Journal of International Financial Management and Accounting 8(1), 69-86.
- Agrawal, A., & Knoeber, C. R. (1996). Firm performance and mechanisms to control agency problems between managers and shareholders. Journal of Financial and Quantitative Analysis 31(3), 377-397.
- Ahmed, A. S. (1994). Accounting earnings and future economic rents: An empirical analysis. Journal of Accounting and Economics 17(3), 377-400.
- Ahmed, K. A. (1996). The effect of corporate characteristics on disclosure quality in corporate annual reports: A meta-analysis. Annual convention of the American Accounting Association, Chicago, USA.
- Alchian, A. A., & Woodward, S. (1987). Reflections on the theory of the firm. Journal of Institutional and Theoretical Economics 143 (1), 137-142.
- Alchian, A. A., & Woodward, S. (1988). The firm is dead; long live the firm a review of Oliver E. Williamson's the economic institutions of capitalism. Journal of Economic Literature 26 (1), 65-79.
- Aldrich, J., & Nelson, F. (1984). Linear probability, logit, and probit models, Beverly Hills, CA, Sage Publications.
- Ali, A., & Kumar, K. R. (1994). The magnitude of financial statement effects and accounting choice: The case of the adoption of SFAS 87. Journal of Accounting and Economics 18(1), 89-114.
- Ali, A., Ronen, J., & Li, S. H. (1994). Discretionary disclosure in response to intra-industry information transfer. Journal of Accounting Auditing & Finance 9(2), 265-282.
- Anderson, D., Francis, J. R., & Stokes, D. J. (1993). Auditing, directorships and demand for monitoring. Journal of Accounting and Public Policy 12(4), 353-375.
- Anderson, D., & Zimmer, I. (1995). The structure of audit committees. Working paper. The University of Queensland.
- Baber, W. R., Janakiraman, S. N., & Kang, S-H. (1996). Investment opportunities and the structure of executive compensation. Journal of Accounting and Economics 21(3), 297-318.
- Baker, G. P. (1993). Growth, corporate policies, and the investment opportunity set. Journal of Accounting and Economics 16(1/2/3), 161-165.

- Ball, R., & Foster, G. (1982). Corporate financial reporting: A methodological review of empirical research. Journal of Accounting Research 20(Supplement), 161-234.
- Barclay, M. J., & Smith, C. W. (1995). The maturity structure of corporate debt. The Journal of Finance 50(1), 609-631.
- Barclay, M. J., Smith, C. W., & Watts, R. L. (1995). The determinants of corporate financial and dividend policies. Journal of Applied Corporate Finance 7(4), 4-19.
- Barry, C. B., & Brown, S. J. (1985). Differential information and security market equilibrium. Journal of Financial and Quantitative Analysis 20(4), 407-422.
- Barth, M. E., McNichols, M. F., & Wilson, G. P. (1995). Factors influencing firms' disclosure about environmental liabilities. Working paper, Stanford University and MIT.
- Batahala, C. T., Bowlin, O. D., & Rao, R. P. (1995). Debt structure, inside ownership, and dividend policy: A test of substitutability hypothesis in an agency framework. Research in Finance 13, 237-260.
- Bathala, C. T., Moon, K. P., & Rao, R. P. (1994). Managerial ownership, debt policy, and the impact of institutional holdings: An agency perspective. Financial Management 23(3), 38-50.
- Bathala, C. T., & Rao, R. P. (1995). The determinants of board composition: An agency theory perspective. Managerial and Decision Economics 16(Jan.-Feb.), 59-69.
- Beasley, M. S. (1996). An empirical analysis of the relation between the board of director composition and financial statement fraud. The Accounting Review 71(4), 443-465.
- Benston, G. J. (1985). The market for public accounting services: Demand, supply and regulation. Journal of Accounting and Public Policy 4(1), 33-79
- Bergström, C., & Rydqvist, K. (1990). The determinants of corporate ownership. Journal of Banking and Finance 14(2/3), 237-253.
- Berle, A. A., & Means, C. G. (1932). The modern corporation and private property, New York: Commerce Clearing House.
- Bhagat, S., & Black, B. (1996). Do independent directors matter? Working paper. The University of Colorado and Columbia Law School.
- Bhagat, S., & Welch, I. (1995). Corporate research & development investments: International comparisons. Journal of Accounting and Economics 19(2 & 3), 443-470.
- Bhattacharya, S. (1979). Imperfect information, dividend policy and the "birds in the hand fallacy". Bell Journal of Economics 10(1), 259-70.
- Birkett, B. S. (1986). The recent history of corporate audit committees. The Accounting Historians Journal 13(2), 109-124.

- Booth, J. R., & Deli, D. N. (1996). Factors affecting the number of outside directorships held by CEOs. Journal of Financial Economics 40(1), 81-104.
- Botosan, C. (1997). Disclosure level and the cost of equity capital. The Accounting Review, 72(3), 323-349.
- Boyd, B. K. (1995). CEO duality and firm performance: A contingency model. Strategic Management Journal 16(4), 301-312.
- Bradbury, M. E. (1990). The incentives for voluntary audit committee formation. Journal of Accounting and Public Policy 9(1), 19-36.
- Brickley, J. A., Coles, J. L., & Terry, R. L. (1994). Outside directors and the adoption of poison pills. Journal of Financial Economics 35(3), 371-390.
- Brickley, J. A., & James, C. M. (1987). The takeover market, corporate board composition, and ownership structure: The case of Banking. Journal of Law and Economics 30(1), 161-180.
- Brown, P. (1993). Capital markets-based research in accounting: An introduction. Cooper and Lybrand Research Monograph No. 1. Coopers & Lybrand and Accounting Association of Australia and New Zealand.
- Bryan, S. H. (1997). Incremental information content of required disclosures contained in management discussion and analysis. The Accounting Review 72(2), 285-301.
- Byrd, J. W., & Hickman, K. A. (1992). Do outside directors monitor managers?: Evidence from tender offer bids. Journal of Financial Economics 32(2), 195-221.
- Cahan, S. F., & Hossain, M. (1996). The investment opportunity set and disclosure policy choice: Some Malaysian evidence. Asia Pacific Journal of Management 13(1), 65-85.
- Cahan, S. F., & Hossain, M. (1997). Board composition and regulatory change: Evidence from the enactment of new companies legislation in new Zealand. Asia Pacific Conference on International Accounting Issues, Bangkok, Thailand.
- Cerf, R. (1961). Corporate reporting and investment decisions, University of California press: Berkeley.
- Chan, S. H., Martin, J., & Kensinger, J. (1990). Corporate research and development expenditures and share value. Journal of Financial Economics 26(2), 255-276.
- Chow, C. W. (1982). The demand for external auditing: Size, debt and ownership influences. The Accounting Review 57(2), 272-291.
- Chow, C. W., & Wong-Boren, A. (1987). Voluntary financial disclosure by Mexican corporations. The Accounting Review 62(3), 533-541.
- Christie, A. A. (1990). Aggregation of test statistics: An evaluation of the evidence on contracting and size hypotheses. Journal of Accounting and Economics 12(1/2), 15-36.

- Christie, A. A., & Zimmerman, J. L. (1994). Efficient and opportunistic choices of accounting procedures: Corporate control contests. The Accounting Review 69(4), 539-566.
- Chung, K., & Charoenwong, C. (1991). Investment options, assets in place, and the risk of stocks. Financial Management 20, 21-33.
- Clarkson, P. M., Kao, J. L., & Richardson, G. D. (1994). The voluntary inclusion of forecasts in the MD & A section of annual reports. Contemporary Accounting Research 11(1), 1-30.
- Clarkson, P. M., & Simunic, D. A. (1994). The association between audit quality, retained ownership, and firm-specific risk in US VS Canadian IPO markets. Journal of Accounting and Economics 17(1/2), 207-228.
- Copley, P. A., Doucet, M. S. & Gaver, K. M. (1994). A simultaneous equations analysis of quality control review outcomes and engagement fees for audit for audits of recipients of federal financial assistance. The Accounting Review 69(1), 244-256.
- Courtenay, S. M., & Keller, S. B. (1994). Errors in databases revisited: An examination of the CRSP shares-outstanding data. The Accounting Review 69(1), 285-291.
- Craswell, A. T., Francis, T. R., & Taylor, S. L. (1995). Auditor brand name reputations and industry specializations. Journal of Accounting and Economics 20(3), 297-322.
- Craswell, A.T., & Taylor, S. L. (1992). Discretionary disclosure of reserves by oil and gas companies: An economic analysis. Journal of Business Finance & Accounting 19(2), 295-308.
- Crocombe, G. T., Enright, M. J., & Porter, M. E. (1991). Upgrading New Zealand's competitive advantage. Oxford University Press, Auckland, New Zealand.
- Darrough, M., N., & Stoughton, N., M. (1990). Financial disclosure policy in an entry game. Journal of Accounting and Economics 12(1-3), 219-243.
- DeAngelo, L. E. (1981). Auditor size, and audit quality. Journal of Accounting and Economics 3(3), 183-99.
- Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1996). Causes and consequences of earnings manipulation: An analysis of firms subject to enforcement actions by the SEC. Contemporary Accounting Research 13(1), 1-36.
- Deegan, C. (1997). Efficient management remuneration plan design: A consideration of specific human capital investments. Accounting and Finance 37(1), 1-40.
- DeFond, M. L. (1992). The association between changes in the client firm agency costs and auditor switching. Auditing: A Journal of Practice & Theory 11(1), 16-31.
- Demsetz, H. (1983). The structure of ownership and theory of the firm. Journal of Law and Economics 26(2), 375-390.

- Demsetz, H., & Lehn, K. (1985). The structure of corporate ownership: Causes and consequences. Journal of Political Economy 93(6), 1155-1177.
- Diamond, D. W., & Verrecchia, R. E. (1991). Disclosure, liquidity, and the cost of capital. The Journal of Finance 46(3), 1325-1359.
- Downes, D., & Heinkel, R. (1982). Signalling and valuation unseasoned new issues. The Journal of Finance 37(1), 1-10.
- Dye, R. A. (1985). Disclosure of non-proprietary information. Journal of Accounting Research 23(1), 123-145.
- Eikner, A. E., Hefzi, H., & Glezen, A. W. (1995). Prospective information in managements' discussion and analysis: A test of information content. Proceedings, Annual National Convention of the American Accounting Association, Orlando, Florida.
- Eisenhardt, K. M. (1989). Agency theory: An assessment and review. Academy of Management Review 14(1), 57-74.
- Ettredge, M., Simon, D., Smith, D., & Stone, M. (1994). Why do companies purchase timely quarterly reviews? Journal of Accounting and Economics 18(2), 131-151.
- Fama, E., & Jensen, M. C. (1983a). Separation of ownership and control. Journal of Law and Economics 26(2), 301-325.
- Fama, E., & Jensen, M. C. (1983b). Agency problems and residual claims. Journal of Law and Economics 26(2), 327-349.
- Feltham, G. A., Hughes, J. S., & Simunic, D., A. (1991). Empirical assessment of the impact of auditor quality on the valuation of new issues. Journal of Accounting and Economics 14(4), 375-399.
- Feltham, G. A., & Xie, T. Z. (1992) Voluntary financial disclosure in an entry game with continua of types. Contemporary Accounting Research 9(1), 46-80
- Firth, M., & Smith, A. (1992). Selection of auditor firms by companies in the new issue market. Applied Economics 24(2), 247-255.
- Fox, M. A., & Hamilton, R. T. (1994). Ownership and Diversification: Agency theory or stewardship theory. Journal of Management Studies 31(1), 69-81.
- Francis, J. R., & Wilson, E. R. (1988). Auditor changes: A joint test of theories relating to agency costs and auditor differentiation. The Accounting Review 63(4), 663-682.
- Frankle, R., McNichols, M., & Wilson, G. P. (1995). Discretionary disclosure and external financing. The Accounting Review 70(1), 135-150.
- Francis, J., & Smith, A. (1995). Agency costs and innovation some empirical evidence. Journal of Accounting and Economics 19(2 & 3), 383-409.

- Frost, C. A. (1997). Characteristics and information value of corporate disclosures of forward-looking information in global equity markets. Working paper. John M. Olin School of Business, Washington University (St. Louis), USA.
- Gaver, J. J., & Gaver, K. M. (1993). Additional evidence on the association between the investment opportunity set and corporate financing, dividend, and compensation policies. Journal of Accounting and Economics 16(1-3), 127-160.
- Gibbs, P. A. (1993). Determinants of corporate restructuring: The relative importance of corporate governance, takeover threat, and free cash flow. Strategic Management Journal, 14 (Special issue) Summer, 51-68.
- Gibbins, M., Richardson, A., & Waterhouse, J. (1990). The management of corporate financial disclosure: Opportunism, ritualism, policies and processes. Journal of Accounting Research, 28(1), 121-143.
- Glass, G. (1976). Secondary, and meta-analysis of research. Educational Researcher, 5(?), 3-8.
- Griffin, A. (1997). in Asia & Pacific Review. Walden Publishing Ltd., Essex. UK.
- Hagerman, R. L., & Zmijewski, M. E. (1979). Some economic determinants of accounting policy choice. Journal of Accounting and Economics 1(2), 141-161.
- Hair, J. K., Anderson, R. E., & Tatham, R. L. (1990). Multivariate data analysis, (2nd ed.), Macmillan Publishing Company.
- Hermalin, B. E., & Weisbach, M. S. (1988). The determinants of board composition. Rand Journal of Economics 19(4), 589-606.
- Hermalin, B. E., & Weisbach, M. S. (1991). The effects of board composition on direct incentives on firm performance. Financial Management 20(4), 101-112.
- Holthausen, R. W., Larcker, D. F., and Sloan, R. G. (1995). Business unit innovation and the structure of executive compensation. Journal of Accounting and Economics, 19(2 & 3), 279-313.
- Holthausen, R. W., & Leftwich, R. W. (1983). The economic consequences of accounting choice. Journal of Accounting and Economics 5(2), 77-117.
- Healy, P., Palepu, K., & Sweeney, A. (1995). Causes and consequences of expanded voluntary disclosure. Working paper, MIT and Harvard Business School.
- Hossain, M., Tan, L. M., & Adams, M. B. (1994). Voluntary disclosure in an emerging capital market: Some empirical evidence from companies listed on the Kuala Lumpur stock exchange. The International Journal of Accounting 29(4), 334-351.
- Hossain, M., & Adams, M. B. (1996). An empirical test of the free cash flow hypothesis in Malaysian quoted companies. Working paper No. 96.7. School of Applied and International Economics, Massey University.

- Hughes, P., J. (1986). Signalling by direct disclosure under asymmetric information. Journal of Accounting and Economics 8(2), 119-142.
- Hunt, H. G. (1986). The separation of ownership and control: Theory, evidence, and implications. Journal of Accounting Literature 5, 85-124.
- Jensen, M. C. (1983). Organization theory and methodology. The Accounting Review 58(2), 319-339.
- Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. American Economic Review 76(2), 323-329.
- Jensen, M. (1993). The modern industrial revolution, exit, and the failure of internal control system. The Journal of Finance 48(3), 831-880.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Management behaviour, agency costs and ownership structure. Journal of Financial Economics 3(3), 305-360.
- Jensen, G. R., Solberg, D. P., & Zorn, T. S. (1992). Simultaneous determination of inside ownership, debt, and dividend policies. Journal of Financial and Quantitative Analysis 27(2), 247-263.
- Jiambalvo, J. (1996). Discussion of causes and consequences of earnings manipulation: An analysis of firms subject to enforcement actions by SEC. Contemporary Accounting Research 13(1), 37-47.
- Johnson, E. N., Walker, K. B., & Westergaard, E. (1995). Supplier concentration and pricing of audit services in New Zealand. Auditing: A Journal of Practice & Theory 14(2), 74-89.
- Johnson, W. B., & Lys, T. (1990). The market for audit services: Evidence from voluntary auditor changes. Journal of Accounting and Economics 12(1-3), 281-308.
- Jung, K., Kim, Y-C, & Stulz, R. E. (1996). Timing, investment opportunities, managerial discretion, and the security issue decision. Journal of Financial Economics 42(2), 159-185.
- Kallapur, S. (1994). Dividend payout ratios as determinants of earnings response coefficients: A test of the free cash flow theory. Journal of Accounting and Economics 17(3), 359-375.
- Kaplan, S. N. (1997). Corporate governance and corporate performance: A comparison of Germany, Japan, and the US. Journal of Applied Corporate Finance 9(4), 86-93.
- King, R., Pownell, G., & Waymire, G. (1990). Expectations adjustment via timely management forecasts: Review, synthesis, and suggestions for future research. Journal of Accounting Literature 9, 113-144.
- Lang, L., Ofek, E., & Stulz, R.M. (1996). Leverage, investment, and firm growth. Journal of Financial Economics 40(1), 3-29.

- Lang, M. H., & Lundholm, R. J. (1993). Cross-sectional determinants of analysts ratings of corporate disclosures. Journal of Accounting Research 31(2), 246-271.
- Lang, M. H., & Lundholm, R. J. (1996). Corporate disclosure policy and analyst behaviour. The Accounting Review 71 (4), 467-492.
- Lange, H. P., & Sharpe, I. G. (1995). Monitoring costs and ownership concentration: Australian evidence. Applied Financial Economics 5(6), 441-447.
- Leftwich, R. W., Watts, R. L., & Zimmerman, J. L. (1981). Voluntary corporate disclosure: the case of interim reporting. Journal of Accounting Research 1(supplement) 50-77.
- Leland, H. E., & Pyle, D. H. (1977). Information asymmetries, financial structure, and financial intermediation. The Journal of Finance 32(2), 371-387.
- Lev, B., & Penman, S. (1990). Voluntary forecast disclosure, nondisclosure, and stock prices. Journal of Accounting Research 28(1), 49-76.
- Mak, Y. T. (1991). Corporate characteristics and the voluntary disclosure of forecast information: A study of New Zealand prospectuses. The British Accounting Review 23(4), 305-327.
- Mak, Y. T. (1996). Forecast disclosure by initial public offering firms in a low-litigation environment. Journal of Accounting and Public Policy 15(2), 111-136.
- Mak, Y. T., & Roush, M. L. (1996). Economic determinants of board characteristics: An empirical study of initial public offering firms. Working paper No. 164. Department of Accountancy, Massey University.
- Malatesta, P.H., & Walking, R. A. (1988). Poison pill securities: Stockholder wealth, profitability, and ownership structure. Journal of Financial Economics 20, 347-376.
- Malone, D., Fries, C., & Jones, T. (1993). An empirical investigation of the extent of corporate financial disclosure in the oil and gas industry. Journal of Accounting, Auditing & Finance, 8(3), 249-273.
- Marquardt, C. A., & Wiedman, C. I. (1997). Voluntary disclosure, information asymmetry, and insider selling through secondary equity offerings. Working paper No. OLIN-97-05, John M. Olin School of Business, Washington University (St. Louis), USA.
- Marston, C. L., & Shrikes, P. J. (1991). The use of disclosure indices in accounting research. The British Accounting Review 23 (4), 195-210.
- McConnell, J. J., & Servaes, H. (1990). Additional evidence on equity ownership and corporate value. Journal of Financial Economics 27(2), 595-612.
- Mehran, H. (1995). Executive compensation structure, ownership, and firm performance. Journal of Financial Economics 38(2), 163-184.
- Menon, K., & Williams, J. D. (1994). The use of audit committees for monitoring. Journal of Accounting and Public Policy 13(2), 121-139.

- Mian, S.L. (1996). Evidence on corporate hedging policy. Journal of Financial and Quantitative Analysis, 31(3), 419-439.
- Morck, R., Shleifer, A. & Vishny, R. W. (1988). Management ownership and market valuation: An empirical analysis. Journal of Financial Economics 20(1-2) 293-315.
- Morris, R. D. (1987). Signalling, agency theory and accounting policy choice. Accounting and Business Research 18(69), 47-56.
- Mulholland, R. D. (1995). Introduction to the New Zealand legal system. (7th eds). Butterworths, Wellington, New Zealand..
- Moyer, R. C., Chatfield, R. E., & Sisneros, P. M. (1989). Security analyst monitoring activity: Agency costs and information demand. Journal of Financial and Quantitative Analysis 24(4), 503-512.
- Myers, S. C. (1977). Determinants of corporate borrowing. Journal of Financial Economics, 5, 141-175.
- New Zealand Stock Exchange (1994). Sharemarket Review. Wellington.
- New Zealand Stock Exchange (1995). Sharemarket Review. Wellington.
- Noreen, E. (1988). An empirical comparison of Probit and OLS regression hypothesis tests. Journal of Accounting Research 26(1), 119-133.
- Patton, A., & Baker, J. (1987). Why won't directors rock the boat?. Harvard Business Review 65(6), 10-12.
- Penman, S.H. (1996). The articulation of price-earnings ratios and market to book ratios and the evaluation of growth. Journal of Accounting Research 34(2), 235-259.
- Perera, M. H. B., & Rahman, A. R., (1997). Accounting and its environment in New Zealand, Accounting in the Asia-Pacific region, Baydoun, N., Nishimura, A. and Willet, R (eds.), John Wiley & Sons (Asia) Pte Ltd, Singapore.
- Philpott, B. (1995). The New Zealand Economy to 2005. Working Paper, No. 277, Economics Group, Victoria University of Wellington.
- Pincus, K., Rusbarsky, M., & Wong, J. (1989). Voluntary formation of corporate audit committees among NASDAQ firms, Journal of Accounting and Public Policy 8(4), 239-265.
- Pindyck, R., & Rubinfeld, D. L. (1981). Econometric models & economic forecasts, McGraw-Hill, Inc. USA.
- Porter, B. P. (1994). Principles of external auditing, Dunmore press. Wellington.
- Porter, B. P., & Gendall, P. J. (1993). An international comparison of the development and role of audit committees in the private sectors. Working paper No. 134, Department of Accountancy, Massey University.

- Rediker, K. J., & Seth, A. (1995). Board of directors and substitution effects of alternative governance mechanisms. Strategic Management Journal 16(2) 85-99.
- Rosentein, S., & Wyatt, J. G. (1990). Outside directors, board independence, and shareholder wealth. Journal of Financial Economics 26(2), 175-191.
- Ross, M. (1993). The companies act 1993- A bird's eye view. Accountant's Journal (December), 12-13.
- Ross, S.A. (1977). The determination of financial structure: an incentive-signalling approach. Bell Journal of Economics 8(1), 23-40.
- Ruland, W., Tung, S., & George, N. E. (1990). Factors associated with the disclosure of managers' forecast. The Accounting Review 65(3), 710-721.
- Seth, A., & Thomas, H. (1994). Theories of the firm: Implications for strategy research. Journal of Management Studies 31(2), 165-191.
- Skinner, D. J. (1993). The investment opportunity set and accounting procedure choice - preliminary evidence. Journal of Accounting and Economics 16(4), 407-445.
- Skinner, D. J. (1994). Why firms voluntarily disclose bad news. Journal of Accounting Research, 32(1), 39-60.
- Smith, C. W., & Warner, J. B. (1979). On financial contracting: An analysis of bond covenants. Journal of Financial Economics 7, 117-161.
- Smith, C. W., & Watts, R. L. (1992). The investment opportunity set and corporate financing, dividend, and compensation policies. Journal of Financial Economics 32(3), 263-292.
- Statistics New Zealand (1995). Business activity 1992-94. Wellington, New Zealand.
- Stone, M., & Rasp, J. (1991). Trade-offs in the choice between logit and OLS for accounting choice studies. The Accounting Review 66(1), 170-187.
- Sweeney, A. P. (1994). Debt-covenant violations and managers' accounting responses. Journal of Accounting and Economics 17(3), 281-308.
- Titman, S., & Wessels, R. (1988). The determinants of capital structure choice. The Journal of Finance 43(1), 1-19.
- Verrecchia, R. E. (1983). Discretionary disclosure. Journal of Accounting and Economics 5(4), 179-194.
- Verrecchia, R. E. (1990). Endogenous proprietary costs through firm interdependence. Journal of Accounting and Economics 12(1-3), 245-250.
- Wakelin, G. (1994). Corporate governance in New Zealand. Working paper No. 10, Graduate School of Business and Government Management, Victoria University of Wellington.

- Walker, K. B., & Johnson, E. N. (1996). A review and synthesis of research on supplier concentration, quality and fee structure in non-US markets for auditor services. The International Journal of Accounting 31(1), 1-18.
- Watts, R.L. (1977). Corporate financial statements, a product of the market and political processes. Australian Journal of Management 2(1), 53-75.
- Watts, R. L., & Zimmerman, J. L. (1986). Positive accounting theory. Englewood Cliff, NJ: Prentice Hall.
- Watts, R. L., & Zimmerman, J. L. (1990). Positive accounting theory: A ten year perspective. The Accounting Review 65(1), 131-156.
- Welker, M. (1995). Disclosure policy, information asymmetry and liquidity in equity markets. Contemporary Accounting Research 11(2), 801-828.
- Whidbee, D. A. (1997). Board composition and control of shareholder voting rights in the banking industry. Financial Management 26(4), 27-41.
- Whittred, G., & Zimmer, I. (1992). Financial Accounting: Incentive effects and economic consequences (3rd ed.), Sydney: Holt, Rinehart and Winston.
- Whittred, G., & Zimmer, I. (1994). Contracting cost determinants of GAAP for joint ventures in an unregulated environment. Journal of Accounting and Economics 17(1/2), 95-112.
- Williamson, O.E. (1985). The economic institutions of capitalism, London, Free press.
- Williamson, O.E. (1988). Corporate finance and corporate governance. Journal of Finance 43(3), 567-591.
- Wong, J. (1988a). Economic incentives for the voluntary disclosure of current cost financial statements. Journal of Accounting and Economics 10(2), 151-167.
- Wong, J. (1988b). Agency theory and accounting choices: A theoretical framework. Pacific Accounting Review 1(1), 22-41.
- Wruck, K.H. (1989). Equity ownership concentration and private value: Evidence from private equity financing. Journal of Financial Economics 23(1) 3-28.

APPENDIX A

Dear Sir/Madam:

Request for assistance in research study on corporate governance

Corporate governance is one of most pressing issues facing New Zealand business. It is also one area where academic research has had a significant impact on practice. For example, the growth in importance of share ownership schemes, use of outside directors, and full disclosure can be traced to a series of academic papers on agency theory beginning in the mid-1970s.

Unfortunately most of the academic research is based on US data. Therefore it is difficult to determine whether the same corporate governance mechanisms which are optimal in the US are also optimal in New Zealand. If New Zealand businesses are to find cost-effective ways to improve corporate governance (rather than just blindly import the latest fads from the US), it is imperative that academic researchers have New Zealand data in order to be able to make conclusions about our local environment.

This is why I am writing to you. I am currently doing a Ph.D that examines which corporate governance mechanisms are used in New Zealand firms and determines whether the choice of mechanisms conforms with the developed theory. I have gathered data for 120 New Zealand firms (including yours) for a five-year period but, unfortunately, cannot get all the data I need from the published annual reports or other data sources. While I know your time is valuable and that you are extremely busy, I come to you as a last resort. Because of the importance of having New Zealand based studies in this area, I hope you will take 10 to 15 minutes to complete the enclosed 2-page questionnaire.

I can assure you that your responses will be kept in the strictest confidence, and I have provided a self-addressed envelope for you to return your response. Further if you wish to receive a copy of the results of the study, please tick the appropriate box on the questionnaire and I will send it to you.

I thank you for taking time to read this letter and look forward to your reply and your interest in this study.

Kind Regards

Mahmud Hossain
Lecturer in Accountancy

THE INVESTMENT OPPORTUNITY SET AND CORPORATE OWNERSHIP, DIRECTORSHIP, AUDITING AND DISCLOSURE POLICIES: NEW ZEALAND EVIDENCE

BASIC DETAILS

OFFICE USE ONLY

[1] NAME OF COMPANY

1

[2] LISTING STATUS

IS YOUR COMPANY LISTED ON THE NEW ZEALAND STOCK EXCHANGE? (TICK ONE BOX)

YES

NO

2A

2B

PLEASE ANSWER THE FOLLOWING QUESTIONS

[3] WHAT PERCENTAGE OF YOUR SHARES WAS HELD BY THE DIRECTORS AND THE TOP FIVE MANAGERS IN EACH OF THE FOLLOWING YEARS?

1991 _____ % 1992 _____ % 1993 _____ %
 1994 _____ % 1995 _____ %

3A 3B 3C
 3D 3E

[4] FOR HOW MANY YEARS HAS YOUR CURRENT CHIEF EXECUTIVE OFFICER (OR MANAGING DIRECTOR) BEEN IN OFFICE?

_____ YEARS

4

[5] HAS YOUR COMPANY CHANGED ITS CHIEF EXECUTIVE OFFICER (OR MANAGING DIRECTOR) IN THE PERIOD 1991-1995? (TICK ONE BOX)

YES

NO

5A

5B

IF YES, PLEASE INDICATE THE YEAR OF THE CHANGE (I.E. 1991, 1992, 1993, 1994 OR 1995) AND THE LENGTH OF TENURE OF THE REPLACED CEO (OR MANAGING DIRECTOR) PRIOR TO THE CHANGE

YEAR OF CHANGE TENURE PRIOR TO REPLACEMENT

_____ _____
 _____ _____

5C
 5D

[6] HOW MANY MEMBERS SERVED ON THE BOARD OF DIRECTORS IN EACH OF THE FOLLOWING YEARS?

1991 _____ 1992 _____ 1993 _____
 1994 _____ 1995 _____

6A 6B 6C
 6D 6E

[7] OF THE BOARD MEMBERS, HOW MANY WERE:

(i) DIRECTORS WHO WERE ALSO EMPLOYEES (ACTIVE OR RETIRED) OF YOUR COMPANY?

1991 _____ 1992 _____ 1993 _____ 7A 7B 7C
 1994 _____ 1995 _____ 7D 7E

(ii) DIRECTORS WHO WERE NOT FULL-TIME EMPLOYEES BUT HAVE CLOSE TIES WITH YOUR COMPANY?

1991 _____ 1992 _____ 1993 _____ 8A 8B 8C
 1994 _____ 1995 _____ 8D 8E

[9] DOES YOUR CEO (OR MANAGING DIRECTOR) PRESIDE AT THE BOARD MEETINGS? (*TICK ONE BOX*)

YES NO 9A 9B

[10] ON AVERAGE HOW MANY TIMES DOES THE BOARD OF DIRECTORS MEET?

_____ TIMES 10A

[11] IS THE CURRENT CEO (OR MANAGING DIRECTOR) ALSO THE FOUNDER OF THE COMPANY? (*TICK ONE BOX*)

YES NO 11A 11B

[12] WHAT WAS THE TOTAL EXPENDITURE ON INTERNAL AUDITING IN EACH OF THE FOLLOWING YEARS?

1991 _____ 1992 _____ 1993 _____ 12A 12B
 12C
 1994 _____ 1995 _____ 12D 12E

[13] WHAT WAS THE TOTAL EXPENDITURE ON ADVERTISING IN EACH OF THE FOLLOWING YEARS?

1991 _____ 1992 _____ 1993 _____ 13A 13B
 13C
 1994 _____ 1995 _____ 13D 13E

[14] WOULD YOU LIKE TO RECEIVE A SUMMARY OF THIS STUDY? (*TICK ONE BOX*)

YES NO 14A 14B

APPENDIX B**CLASSIFICATION OF STATEMENTS OF FUTURE PROSPECTS**

-
1. Volume to increase or decrease.
 2. Sales forecast - descriptive.
 3. Sales forecast - quantitative.
 4. Market share increase or decrease.
 5. General economic factors affecting future business.
 6. Expansion of line of business.
 7. Qualitative profit forecast.
 8. Quantitative profit forecast.
 9. Description of capital projects committed.
 10. Committed expenditure for capital projects.
 11. Cash flow forecast - qualitative.
 12. Cash flow forecast - quantitative.
 13. Backlog increase or decrease/new orders down or up.
 14. Discussion of future industry trend.
 15. Legislation with future positive or negative consequences/political factors affecting future business.
 16. Technological factors affecting future business.
 17. Description of future R & D activities.
 18. Forecast of R & D expense.
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